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SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
EPA CONTRACT NO.: 68HE0319D0004

April 7, 2020

Mr. Daniel Gaughan, On-Scene Coordinator
U.S. Environmental Protection Agency, Region II
Superfund and Emergency Management Division
2890 Woodbridge Avenue
Edison, NJ 08837

EPA CONTRACT No: 68HE0319D0004
TD No: TO-0032-0030
DC No: STARTV-01-F-0069
SUBJECT: FINAL REMOVAL ASSESSMENT SAMPLING REPORT, CANADIAN RADIUM AND URANIUM SITE, MOUNT KISCO, WESTCHESTER COUNTY, NEW YORK

Dear Mr. Gaughan,

Enclosed please find the Removal Assessment Sampling Report which summarizes the radon and soil sampling activities conducted by the U.S. Environmental Agency, Region II (EPA) with the support of Weston Solutions, Inc., Superfund Technical Assessment & Response Team V (START V) at an area of concern (AOC) located in proximity to the Canadian Radium and Uranium Site in Mount Kisco, Westchester County, New York. The sampling event was performed at the AOC on September 8 through 11, 2019. The comments made by EPA regarding the previous version of this report (DCN: STARTV-01-D-0070) have been incorporated.

If you have any questions or comments, please contact me at (732) 585-4413.

Sincerely,

WESTON SOLUTIONS, INC.

Bernard Nwosu
START V Site Project Manager

Enclosure
cc: TD File: TO-0032-0030

FINAL REMOVAL ASSESSMENT SAMPLING REPORT

CANADIAN RADIUM AND URANIUM
Mount Kisco, Westchester County, New York

Site Code: A23P
CERCLIS Code: NYD987001468

Prepared by:

Superfund Technical Assessment & Response Team V
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Prepared for:

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1.0 Introduction

The U.S. Environmental Protection Agency, Region II (EPA) Superfund and Emergency Management Division (SEMD) with the support of Weston Solutions, Inc., Superfund Technical Assessment & Response Team V (START V) performed Removal Assessment activities on September 8 through 11, 2019 at an area of concern (AOC) located adjacent to the Canadian Radium and Uranium Site (the Site) in Mount Kisco, New York. Exterior, non-intrusive ground radiological survey and radon and soil sampling for laboratory analysis were conducted at the AOC as part of the Removal Assessment activities.

1.1 Site Location and Description

The former Canadian Radium and Uranium (CRU) facility is located to the east of Kisco Avenue and to the west of railroad tracks in the Village of Mount Kisco, Westchester County, New York, in a primarily suburban residential and commercial area. The historic property on the Site is 2.72 acres and includes the 103 Kisco Avenue property currently occupied by a landscaping business and the 105 Kisco Avenue property previously occupied by a stone, masonry and landscaping business which is currently closed, and the property is now vacant. The Site is bounded by Kisco Avenue to the west, southwest, and northwest; railroad tracks to the south, east, and northeast; and a large, privately-owned warehouse to the north and northeast.

The focus AOC for this Removal Assessment event is a commercial property located at 125 Kisco Avenue (designated as Property C008). Property C008 is currently occupied by a car dealership. The single building located on Property C008 comprises of office spaces on the first and second floors and adjoining vehicle service garage on the east side of the building. Parking areas on Property C008 are located north of the building. The southern portion of Property P008 and the northern portion of the Site (Property C003) share a common perimeter fence.

Refer to Attachment A, Figure 1: Site Location Map and Figure 4: Property C008 Soil Sample Location Map.

1.2 Site History and Background

From 1943 until approximately 1966, the CRU facility operations included the recovery of uranium and other radioactive elements from uranium-bearing sludge, old instrumentation, and watch dials. The work at the CRU facility is possibly associated with the federal government's Manhattan Engineering District (Manhattan Project). From 1943 to the 1950s, the primary product of the CRU facility was uranium; subsequently, radium became the principal product until the facility's closure. According to a Village of Mount Kisco memorandum, in 1957, CRU pleaded guilty to charges of allowing three employees to be overexposed to radiation. From March 5, 1958, until sometime after May 19, 1961, decontamination procedures and expectations were established for the CRU facility.

In November and December 1966, the facility buildings (a two-story concrete block building and two smaller one-story concrete block buildings) were decontaminated and demolished. Removal of radioactive dirt to a depth of 12 inches was required on the CRU premises. The most contaminated demolition materials were disposed of by Nuclear Diagnostic Laboratories located in Peekskill, New York, while the less contaminated materials were disposed of at Croton Point

Sanitary Landfill located in Croton-on-Hudson, New York. After decontamination and demolition, a post-operation survey was conducted by Isotopes, Inc. Two locations on the Haggerty Millwork wall, which originally shared a wall with the former CRU facility that was demolished during the 1966 decontamination and demolition process, were found above specifications. One contaminated location was removed by chiseling out the masonry of a wall. The second was a result of tailings from a leaking waste drum which CRU had stored on the second floor fire escape. Since contamination was low here, the area was sealed with 1 to 2 inches of mortar. Railroad Avenue was constructed where the main CRU building once stood and was put in place by the urban renewal efforts in the area. Between 1964 (pre-decontamination/demolition) and 1971 (post-decontamination/demolition), the building layout of the former CRU facility completely changed, and it is believed that none of the original CRU facility buildings remained after 1971.

On April 5, 1979, a local newspaper reported the 1957 death of the CRU plant manager due to leukemia from high radioactivity levels found in his body. On April 20, 1979, a survey was performed by the Assistant Commissioner of Health for Environmental Quality, Westchester Department of Health. Based on the surveys, the highest dose rates were found in a small portion of a locked, chain-link fenced area south of the old wood freight station on Railroad Avenue and east of the L. B. Richard's Lumber yard (*i.e.*, an area located adjacent to the railroad). All other elevated dose rates were found in areas covered by soil and vegetative growth. The 1979 investigation reported that the high readings were obtained from an area covering approximately one square yard (sq. yd.) of the property in an area not used by the public. In addition, the report indicated that the dose rates found did not pose a public health hazard to persons passing the fenced area, to persons working in buildings adjacent to the area, or to persons living across the railroad tracks to the east.

In a memorandum dated February 7, 1980, the Westchester County Health Department described investigation findings in more detail. The area in question was approximately 78 feet by 60 feet, enclosed by a chain-link fence located between the railroad tracks and a concrete paved area. The most significant contaminated area was a strip 15 feet by 5 feet, containing two separate "hot spots". A surface reading using an alpha probe survey meter measured 50 disintegrations per minute (dpm). Elevated readings several times above background were reported for an area extending about 50 feet south from the chain-link fence. The memorandum stated that the origin of this contamination was unknown and that it was not discovered in previous surveys.

In September 1993, the Bureau of Environmental Radiation Protection of the New York State Department of Health (NYSDOH) completed a survey of the Site; indoor radon measurements were collected (*i.e.*, office, show room, storage/sale floor) which documented a maximum concentration of 9.8 picocuries per liter (pCi/L), and the average of the different detectors was about 8.1 pCi/L. The NYSDOH also identified two outdoor areas where presence of radioactive materials were indicated at the back of Richard's Lumber, and the road that runs next to the railroad tracks and adjacent to a fence post inside the fenced portion of what appeared to be Richard's Lumber property on the south side of Railroad Avenue.

In 1994, the U.S. Environmental Protection Agency (EPA) conducted an on-site inspection to measure radon levels, collect air and soil samples, and measure radiation exposure rates. The purpose of the investigation was to determine if conditions required immediate action and if the Site was eligible for long-term remediation under the federal Superfund Program. Elevated exposure rate measurements were documented on both the northern (10–700 microroentgens per

hour [µR/hr]) and southern (10–240 µR/hr) portions of the Site. Radium (Ra)-226 concentrations in soil samples taken from the top 1.5 feet ranged from 3 to 150 picocuries per gram (pCi/g). All of the radon measurements were below EPA's guideline (*i.e.*, 4 pCi/L) and the air samples collected at the Site did not indicate any radioactive contamination.

In July 1998, a complete radiological survey of the Village of Mt. Kisco and Richard's Lumber (former CRU) was conducted by the New York State Department of Environmental Conservation (NYSDEC). The property owned by the Village of Mount Kisco (103 Kisco Avenue) was found to have contamination over one large unpaved area [approximately 4,000 to 5,000 square feet (ft^2)] and a few smaller areas. The 1998 report stated that on the Mt. Kisco property, the highest concentrations of radium observed were a few hundred pCi/g and that most of the contamination was in the top 1 foot of soil. The report stated that the distribution suggests that uranium-containing material was placed on the surface and then the area was leveled. A new road (Railroad Avenue) had been built where the CRU facility once stood; soil sampling completed near the road showed elevated concentration of radium a few feet below the surface. The NYSDEC reported that the distribution of radioactive material near the road appeared to be consistent with movement of soil as part of the building demolition and subsequent construction of the road. Sampling beneath the road surface was not performed. There is no documentation of shielding or other control measures implemented on the 103 Kisco Avenue property, though current conditions suggest that the property had been recently paved with asphalt (of an unknown thickness) or other cover materials.

The 1998 report further stated that the survey of the Richard's Lumber (105 Kisco Avenue) property indicated that radioactive materials were present under the parking lot, but no samples were taken beneath the asphalt. The highest concentration of radium at the Site was found just north of Railroad Avenue (approximately 6,000 pCi/g). A large part of the main outside storage area was reported to be contaminated with radium near the surface as well as within some soil profiles to depths of approximately 4 feet. Survey data suggested that the contamination stopped abruptly at the edges of the paved areas. Railroad Avenue showed count rates that were lower than background soils; NYSDEC attributed these results to absorption by the road surface material (*i.e.*, shielding). The July 1998 report indicated that radiation doses to workers or visitors to the Site as it was being used at the time were not significant. The Site location where the dose rate was highest was a small area near Richard's Lumber, just north of Railroad Avenue. Time spent at this location was small; therefore, the accumulated dose was also estimated to be small. The July 1998 report suggested that significant radium contamination was present on both Mt. Kisco and Richard's Lumber properties. The NYSDEC did not consider the Site to be fully characterized at the completion of the survey.

In September 2013, Weston Solutions, Inc., Site Assessment Team (SAT), performed an on-site reconnaissance and gamma radiation screening of the historic CRU property and other suspected areas of contamination. Background readings taken north and northeast of the Site in the right-of-way (ROW) area alongside Kisco Avenue showed background gamma radiation levels of approximately 7,500 counts per minute (cpm). The highest reading of 73,637 cpm was located on the 105 Kisco Avenue property. Most readings were below 2 times (2x) background. There were three areas with readings that exceeded 2x background, ranging from 30,000 cpm to 73,637 cpm. All three areas above 2x background were located in the back portion of the 105 Kisco Avenue property, east of the historic CRU facility. No signs of ground discoloration were observed.

In November 2013, SAT advanced eight boreholes to depths of 10 feet at the Site for gamma screening and soil sample collection. Using a gamma scintillation meter (Ludlum 2221 Scaler Ratemeter), field gamma screening data collected during the sampling event documented the gamma exposure rates at 6-inch depth intervals vertically down each sample location borehole. The soil samples collected represented the highest levels of gamma radiation recorded for each borehole. The soil samples were analyzed for isotopic thorium (thorium (Th)-228, Th-230 and Th-232), isotopic uranium (uranium (U)-233/234, U-235/236 and U-238), Ra-226, and Ra-228. Analytical results from the sampling effort suggested that there was measureable residual contamination remaining at the Site.

In August 2015, EPA and Weston Solutions, Inc., Removal Support Team 3 (RST 3), currently START V, conducted an extensive Removal Assessment event at the Site, which included a ground radiological survey, radon and soil sampling at the Metropolitan Transit Authority (MTA), Milepost 136, 103 Kisco Avenue (Property C001), Hickory Homes and Properties, Inc., 103 Kisco Avenue (Property C002), and 105 Kisco Avenue (Property C003) which was occupied at the time by New York Stone and Building Supply. Ground radiological survey and soil sampling was conducted at an off-site background location (comprising a strip mall), 145-159 Kisco Avenue (Property C004). Background gamma readings were taken at the off-site background location using Ludlum-2241 equipped with a sodium iodide (NaI) 2x2 scintillator, fluke photoionization chamber (FPIC), and high pressure ion chamber (HPIC). Background gamma readings taken with each instrument were as follows: Ludlum-2241 (7,500 - 9,500 cpm), FPIC (9 - 12 µR/hr at waist height and 11 - 13 µR/hr at contact), and HPIC (8.9 µR/hr). Gamma radiation measurements collected with the Ludlum-2241 were more than 2x background at six of the 11 soil sampling locations selected throughout the Site, with values ranging from 20,000 to 180,000 cpm. At Property C003, above-background gamma readings (12,000 to 15,000 cpm) were observed in the southeast corner of the warehouse located northeast on the property. Gamma measurements collected with the FPIC indicated above-background values ranging from 9 to 15 µR/hr at waist level and 14 to 51 µR/hr at contact in the Electrical Room of the main building, and from 14 to 16 µR/hr at waist level and 9 to 15 µR/hr at contact in the southeast corner of the warehouse located northeast on the property. Gamma measurements collected with the HPIC indicated above-background value of 14 µR/hr in the Electrical Room of Property C003 and at six of the 11 soil sampling locations throughout the Site, with values ranging from 14.6 to 36 µR/hr. Radon/thoron measurements collected with RAD7 radon/thoron detectors did not indicate any elevated readings in exterior on-site locations.

On August 3 through 7, 2015, RST 3 procured the services of a National Radon Proficiency Program (NRPP)-certified company to conducted pre-mitigation radon sampling in all the on-site buildings at Properties C001 through C003. Passive activated charcoal canisters (radon canisters) were used to conduct short-term radon sampling tests that lasted a minimum of approximately 72 hours. Radon testing locations were focused on frequently occupied spaces in each on-site building. Bathrooms, kitchens, utility closets, and hallways were not tested to avoid biased results. Analytical results were compared with EPA Site-Specific Action Level of 4.0 pCi/L for radon. Based on the analytical results, radon concentrations did not exceed the EPA Site-Specific Action Level in any living spaces sampled at Properties C001 and C002. However, in Property C003, analytical results indicated radon concentrations above the EPA Site-Specific Action Level in 11 of the 13 samples, including one duplicate, collected from the main building, with concentrations ranging from 0.6 to 19.5 pCi/L. In addition, analytical results exceeded the EPA Site-Specific Action Level in two samples collected from the southeast corner of the warehouse located on the

far northeast portion of Property C003, with concentration ranging from 2.6 to 5.2 pCi/L. Based on the analytical results from the August 2015 radon sampling event, in October 2015, a radon mitigation system was installed in the main building of Property C003 by the owners, following which a post-remedial radon sampling event was conducted by EPA and RST 3. Analytical results indicated radon concentrations below the EPA Site-Specific Action Level throughout the living spaces in the main building of Property C003.

During the August 2015 event, RST 3 collected a total of 13 soil samples, including two field duplicates, from 11 soil borings advanced to depths 4 feet bgs throughout the Site. Soil samples were collected from the interval exhibiting the highest level of gamma radiation (based on Ludlum-2241 screening data) and/or where a fill layer was observed and/or at the discretion of the EPA On-Scene Coordinator (OSC). The sampling event was conducted in order to verify the presence of residual contamination and potential releases of radiation-containing material in soil associated with the former CRU facility. The soil samples were submitted for laboratory analyses of isotopic thorium, isotopic uranium, and other alpha emitting actinides via alpha spectroscopy Health and Safety Laboratory (HASL)-300 Method A-01-R; Ra-226 (21-day ingrowth), Ra-228, and other gamma emitting radioisotopes via gamma spectroscopy EPA Method GA-01-R; and target analyte (TAL) metals, including mercury. Analytical results indicated that concentrations of Ra-226 exceeded the EPA Site-Specific Action Level (dated August 2015) of 4.06 pCi/g in two of the four soil samples collected from Property C002. Exceedance of Ra-226 in Property C002 was highest at 0 to 36 inches bgs with a concentration of 10.4 J (estimated concentration) pCi/g. Ra-226 was also detected above the EPA Site-Specific Action Level in all four soil samples, including one field duplicate, collected from Property C003. Exceedance of Ra-226 was highest at 0 to 24 inches bgs with a concentration of 129 J pCi/g. Lead concentration was above the EPA Removal Management Level (RML) of 400 milligrams per kilogram (mg/kg) in one soil sample with a concentration of 510 mg/kg. Although no Site-Specific Action Level was provided by EPA for the aqueous (rinsate) samples, based on the analytical results, radioisotope concentrations were generally, not detected.

In April 2016, RST 3 collected a total of 103 soil samples, including five field duplicates, from 20 soil borings at every 6-inch interval up to 4 feet bgs in 15 locations and up to 8 feet bgs in five locations throughout the Site. The sampling event was conducted to identify additional source areas of radiological material at the Site. The soil samples were submitted for laboratory analyses of isotopic thorium, isotopic uranium, and other alpha emitting actinides via alpha spectroscopy HASL-300 Method U-02, Ra-226 (21-day ingrowth), Ra-228, and other gamma emitting radioisotopes via gamma spectroscopy EPA Method 901.1. Analytical results indicated that concentrations of Ra-226 exceeded the EPA Site-Specific Action Level (revised April 2016) of 2.52 pCi/g in eight of the 25 soil samples collected from three locations at Property C002. Exceedance of Ra-226 ranged from 2.57 pCi/g to 89.39 pCi/g at 24 to 36 inches bgs. The concentration of Ra-226 was below the EPA Site-Specific Action Level in soil samples collected 0 to 12 inches bgs at all three soil sample locations. Analytical results indicated exceedance of Ra-226 above the EPA Site-Specific Action Level of 2.52 pCi/g in 32 of the 71 soil samples collected from 16 locations at Property C003. Exceedance of Ra-226 ranged from 2.79 pCi/g at 12 to 24 inches bgs to 926.1 pCi/g at 36 to 48 inches bgs. The concentration of Ra-226 was below the EPA Site-Specific Action Level in soil samples collected 0 to 12 inches bgs in 15 of the 16 soil sample locations.

In June 2016, EPA and the Department of Energy (DOE) independently conducted aerial overflights of the Site to determine the possibility of lateral spread of the radiation contamination. The DOE overflight indicated potential lateral spread to the west of the Site along Kisco Avenue. The EPA overflight indicated two other potential areas of interest. One area was located immediately southeast of the Site off North Moger Avenue and the second approximately one half mile southwest of the Site located within the parking lot of Diplomat Towers (a residential condominium complex).

On December 12, 2016, EPA and RST 3 performed a non-intrusive ground radiological survey of the two new areas of interest to verify if the prior aerial overflight information generated by EPA and DOE were accurate. The areas within the parking lot of the Diplomat Towers and the parking lot immediately adjacent to the Site on the eastern side of the railroad tracks and fronting on North Moger Avenue were surveyed. Background gamma readings ranged from 17 to 20 kilo counts per minute (kcpm). Based on the results of the ground radiological survey, gamma readings did not exceed 30 kcpm in both areas of interest, which is below 2x background.

2.0 Scope of Work

START V was tasked by EPA with providing Removal Assessment support for a non-intrusive ground radiological survey and radon and soil sampling at Property C008. The objective of the survey and sampling activities was to verify if there are radiation source areas on Property C008, which may be attributable to the Site. The scope of work (SOW) included procuring the services of a NRPP-certified company to conduct radon sampling and procuring the services of a Geoprobe® drilling subcontractor with the capability to locate and mark out private subsurface utilities using ground penetrating radar (GPR) in order to clear selected soil sampling locations prior to advancing soil borings with Geoprobe®. The SOW also involved collecting, field-screening and shipping soil samples to the assigned laboratory for analysis; documenting all Site activities in the Site logbook and with photographs; and documenting all soil boring locations with Global Positioning System (GPS) technology.

3.0 On-Site Personnel

Name	Affiliation	Duties On-site
Daniel Gaughan	EPA, Region II	On-Scene Coordinator
David Kappelman	EPA, ERT	Ground Radiological Survey
Michael Hoppe	EPA, ERT	Ground Radiological Survey
Bernard Nwosu	Weston Solutions, Inc. START V, Region II	Site Project Manager, Site Health & Safety, Site Quality Assurance/Quality Control, Sample Collection, and Sample Management
Michael Lang	Weston Solutions, Inc. START V, Region II	Sample Collection and Sample Management
Tom Wysocki	Environmental Field Services, Inc.	GPR and Geoprobe® Operation
Andreas Andreou	Precision Environmental, Inc	Radon Sampling

EPA: U.S. Environmental Protection Agency
ERT: Environmental Response Team
START V: Superfund Technical Assessment & Response Team V
GPR: Ground Penetrating Radar

4.0 Site Activities and Observations

Prior to mobilizing to the Site, the START V drilling subcontractor, Environmental Field Services, Inc. (EFS), contacted Dig Safely New York and requested subsurface utilities mark out of the existing underground public utilities located on Property C008 and within the ROW areas adjacent to the overall AOC. On September 8, 2019, the EPA OSC, personnel from EPA's Environmental Response Team (ERT), and START V mobilized to Property C008 and initiated Removal Assessment activities on the same day.

Utilizing a combination of the RSX1 system which comprised of a 4x4x16 NaI scintillator connected to the RadAssist Software and two sets of Ludlum-2241s and 3x3 NaI scintillators connected to EPA's VIPER system (a wireless network-based communication system), ERT performed non-intrusive radiological survey throughout exterior areas of Property C008 including the parking areas and locations between the ROW area and the fenced property boundary between Property C008 and the Site.

On September 8, 2019, a total of 17 radon canisters, including two co-located radon canisters and one radon canister designated as field blank, were deployed by personnel from the NRPP-certified company, Precision Environmental, Inc. (PEI), at 15 sample locations within the single building, including four sample locations on the first floor, seven sample locations on the second floor office spaces and work areas, and four sample locations in the adjoining vehicle service garage.

On September 8 and 9, 2019, EFS utilized Geoprobe® technology to advance nine soil borings at locations selected by the EPA OSC on Property C008. Prior to advancing any borings, EFS performed subsurface utilities mark-out around the selected soil boring locations using GPR. START V collected a total of 19 soil samples, including one field duplicate, from the soil boring locations, and a rinsate blank was collected each day of the soil sampling event. The characteristics of the soils extracted from each boring location was documented in a boring log prior to sample collection. All the soil and rinsate samples were shipped via FedEx on September 10, 2019 to the assigned laboratory for analysis.

On September 11, 2019, EPA, START V, and PEI returned to Property C008 to pick up the radon canisters that were deployed on September 8, 2019. A total of 17 radon canister samples, including two field duplicates (co-located samples) and one field blank, were picked up by PEI and submitted to the assigned PEI-procured laboratory for analysis.

Refer to Attachment B, Table 2: Soil Sample Collection and Boring Log Summary Table and Attachment C: Photographic Documentation Log.

5.0 Radiological Survey and Sampling Methodology

All field activities including ground radiological survey and radon and soil sampling were performed in accordance with the START V Site-specific Health and Safety Plan (HASP). All sampling activities were performed in accordance with the START V Site-specific Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) and EPA's ERT/Scientific, Engineering, Response and Analytical Services (SERAS) contractor's Standard Operating Procedure (SOP) Number (No.) 2001: *General Field Sampling Guidelines*. The following summary describes the methodologies utilized for the ground radiological survey and radon and soil sampling during the Removal Assessment event.

5.1 Radiological Survey

The radiological survey was performed using a combination of two setups that were secured on a hand cart for mobility. One setup comprised of two sets of Ludlum-2241s and NaI 3x3 scintillators and the second setup comprised of the RSX1 system which includes a 4x4x16 NaI system. Each Ludlum-2241 setup comprised of a NaI 3x3 scintillator, Life-line Interoperable Network Communicator (LINC), and Trimble® GPS. A Gateway (internet source) along with both Ludlum-2241 setups were secured on the hand cart, and a hand-held iPad tablet was utilized to monitor the survey readings. The LINCs, GPS units and iPad tablet were connected to the internet via the Gateway. One Ludlum-2241 setup displayed gamma readings in µR/hr and second Ludlum-2241 setup displayed gamma readings in cpm. The gamma readings were transmitted from the Ludlum-2241 units through the LINCs via the Gateway to the VIPER system which provided instantaneous gamma readings through a computer server (Viper Deployment Manager [VDM]). The GPS units provided geographical references of the gamma readings by transmitting locational data of the Ludlum-2241 setups through the Gateway and VIPER to VDM. The instantaneous gamma readings as well as with the geographical locations were viewed online on the VDM webpage via the iPad tablet. The RSX1 system comprised of a 4x4x16 NaI system that was connected to the RadAssist Software to provide more accurate survey data. With the combination of both survey instrumentation setups and the mobility provided by securing all the survey instruments on the hand cart, ERT conducted non-intrusive gamma survey along predetermined paths throughout exterior areas of Property C008 including the parking areas and areas adjacent to the ROW areas.

5.2 Radon Sampling

In accordance with the guidelines presented in the American National Standards Institute (ANSI)/American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings* (MAMF 2012) and as directed by the EPA OSC, the START V-procured, NRPP-certified company, PEI, provided field support for identifying radon canister placement locations in living spaces of the on-site office and service garage building, placing the canisters, picking up the canisters, and delivering to the assigned laboratory for radon analysis. Passive activated charcoal canisters (radon canisters) were utilized to conduct short-term radon sampling tests that lasted a minimum of approximately 72 hours. Weather information including, temperature, humidity, wind speed and direction, and barometric pressure were documented during canister deployment and pickup. Radon testing locations were focused on frequently occupied spaces on the first and second floors of the one office building and the adjoining vehicle service garage situated on the property. Bathrooms, kitchens, utility closets, and hallways were not tested to avoid biased results. The canisters were raised no less than approximately 20 inches above the ground and, where possible, away from draft and vents. When the protective covering of the canister inlet surface was peeled off, ambient air was allowed to collect in the canisters for a minimum of approximately 72 hours at each location. The radon samples were collected for definitive data and quality assurance/quality control (QA/QC) objectives. A total of 17 radon canisters, including two co-located canisters (field duplicates) and one canister designated as field blank, were deployed by PEI at 15 sample locations within the single building on Property C008.

5.3 Soil Sampling

Soil sampling was performed in accordance with EPA's ERT/SERAS contractor's SOP No. 2012: *Soil Sampling*. Prior to initiating any intrusive site activities (*i.e.*, drilling), START V verified that Dig Safely New York completed the subsurface utilities mark-out requested by EFS. Following the completion of ground radiological survey throughout the AOC, the OSC reviewed the data and conferred with ERT representatives and determined a soil sampling approach to investigate elevated survey results and cover the entire AOC which included nine soil boring locations. Consequently, EFS utilized GPR to perform subsurface utilities mark-out around all the proposed soil boring locations prior to advancing soil borings with Geoprobe®.

In accordance with EPA's ERT/SERAS SOP 2050: *Geoprobe Operation,* soil borings were advanced to depths bgs using Direct-Push sampling method and Macro-Core sampler. The soil cores extracted from each soil boring were screened at every 6-inch interval for gamma radiation using a Ludlum-2241 and NaI 3x3 scintillator. At least two soil samples were collected from each soil core at the intervals that exhibited the highest gamma readings and/or where a fill layer was observed and/or at the discretion of the EPA OSC. The characteristics of the soils in each core was documented prior to sample collection. Soil samples were collected in re-sealable plastic bags using dedicated, disposable plastic scoops. The soil samples were homogenized in the plastic bags prior to being transferred into 32 ounce (oz) plastic sample jars. After sampling, the boring locations were restored by backfilling the bore holes in reverse order with the extracted soil in the cores, tamped down, and sealed with topsoil. The soil samples were collected for definitive data and QA/QC objectives. A total of 19 soil samples, including QA/QC samples, were collected.

Decontamination of non-dedicated sampling equipment (*i.e.* Geoprobe® cutting shoe) was performed in accordance with EPA's ERT/SERAS SOP No. 2006: *Sample Equipment Decontamination* and included Alconox detergent and potable water scrub, potable water rinse, deionized (DI) water rinse, isopropyl alcohol rinse, DI water rinse, steam clean, and air dry. One rinsate blank was collected in four 1-liter (L) plastic bottles (preserved with nitric acid to pH less than 2) at the end of each day of sampling to demonstrate adequacy of the decontamination of non-dedicated sampling equipment. All sample information were entered into the EPA Scribe database from which sample labels and chain of custody (COC) record was generated. The sample labels were affixed to the sample jars and containers, which were stored in a cooler.

6.0 Laboratories Receiving Samples

The following laboratories were utilized for sample analysis during the September 2019 Removal Assessment sampling event:

Laboratory	Sample Matrix	Analyses
Radon Testing Corporation of America (RTCA) 2 Hayes Street Elmsford, New York 10523	Air	Radon

Laboratory	Sample Matrix	Analyses
National Analytical Radiation Environmental Laboratory (NAREL) 540 South Morris Avenue, Montgomery, AL 36115	Soil/Aqueous	Alpha Spectroscopy/Isotopic thorium (Th-227, Th-228, Th-230, Th-232) Alpha Spectroscopy/Isotopic uranium (U-234, U-235, U-238) Gamma Spectroscopy (Bi-212, Bi-214, Cs-137, Eu-155, K-40, Pb-210, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, Tl-208, U-235) Ra-226 and Ra-228 via 21-day ingrowth

7.0 Sample Collection and Dispatch

On September 8 and 9, 2019, START V collected a total of 19 soil samples, including one field duplicate, and two rinsate blanks from Property C008. On September 10, 2019, all 19 soil samples, including the one field duplicate, and two rinsate blanks were documented under COC record No. 2-090919-0032-0030-0001 and shipped via FedEx Airbill No. 7761-9080-7836 to National Analytical Radiation Environmental Laboratory (NAREL) located in Montgomery, Alabama for analyses including isotopic thorium (Th-227, Th-228, Th-230, Th-232) and isotopic uranium (U-234, U-235, U-238) via alpha spectroscopy, other gamma emitting isotopes (Bi-207, Bi-212, Bi-214, Cs-137, Eu-155, K-40, Pb-210, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, Tl-208, U-235) via gamma spectroscopy, and Ra-226 and Ra-228 via 21-day ingrowth method.

On September 11, 2019, START V subcontractor, PEI, collected a total of 17 radon canister samples, including two field duplicates and one field blank, from Property C008. All the radon canister samples were shipped by PEI on the same day of collection to Radon Testing Corporation of America (RTCA) located in Elmsford, New York.

Refer to Attachment B, Table 1: Radon Sample Collection and Validated Analytical Results Summary Table, Table 2: Soil Sample Collection and Boring Log Summary Table, and Attachment D: Chain of Custody Record.

8.0 Radiological Survey Results

Based on the data generated by the three instrumentation setups utilized during the exterior ground radiological survey, background gamma levels ranged from 0 to 13 uR/hr (approximately 14 to 20 kcpm. Gamma radiation levels were mostly background in the parking areas and behind the building. The northeast corner of the property, as well as a small portion of the northwest building entrance and the east side of the building had slightly elevated gamma readings, approximately 2x background. One location between the ROW area and the fenced property boundary of Property C008 and the Site, had elevated gamma readings that were at least 3x background.

Refer to Attachment A, Figure 2: Gamma Survey Results Map

9.0 Analytical Results

The validated analytical results of the radon samples were compared with the EPA Site-Specific Action Level of 4 pCi/L and the validated analytical results of the soil samples were compared with the EPA Site-Specific Action Levels (revised April 2016).

9.1 Radon Analytical Results

Based on validated analytical results, concentrations of radon were well below the EPA Site-Specific Action Level of 4.0 pCi/L in all 17 radon canister samples, including the field duplicate, collected from Property C008. Radon concentrations ranged from 0.2 pCi/L to 0.8 pCi/L.

Refer to Attachment A, Figure 3A: Property C008 First Floor Radon Sample Location Map, Figure 3B: Property C008 Second Floor Radon Sample Location Map, Figure 3C: Property C008 Service Garage Radon Sample Location Map, Attachment B, Table 1: Radon Sample Collection and Validated Analytical Results Summary Table, and Attachment E: Data Validation Report.

9.2 Soil Analytical Results

Based on validated analytical results, concentrations of Ra-226 exceeded the EPA Site-Specific Action Level of 2.52 pCi/g in 10 of the 19 soil samples, including the one field duplicate, collected from Property C008.

Analytical results indicated exceedance concentrations of Ra-226 in: two of three soil samples collected at depths 24 to 36 inches bgs, two of three soil samples, including the field duplicate, collected at depths 36 to 48 inches bgs, three of four soil samples collected at depths 60 to 72 inches bgs, one of two soil samples collected at depths 72 to 84 inches bgs, and two soil samples collected at depths 84 to 96 inches bgs.

Exceedance concentrations of Ra-226 ranged from 2.63 pCi/g in C008-SB002-060072-01 collected at depths 60 to 72 inches bgs to 7.39 pCi/g in C008-SB007-024036-01 collected at depths 24 to 36 inches bgs. Analytical results did not indicate any exceedance concentrations of Ra-226 in soil samples collected at depth 0 to 24 inches, 48 to 60 inches, and 108 to 120 inches, bgs.

It is noteworthy that the two soil samples, C008-SB009-000012-01 and C008-SB009-072084-01, collected at C008-SB009, the location between the ROW area and the fenced property boundary of Property C008 and the Site, where elevated gamma readings were at least 3x background, did not indicate any exceedance concentrations of Ra-226.

Refer to Attachment A, Figure 5: Property C008 Soil Analytical Result Map (Radium -226 Only), Attachment B, Table 2: Soil Sample Collection and Boring Log Summary Table, Table 3: Validated Soil Analytical Results - Radioisotopes Summary Table, and Attachment E: Data Validation Report.

10.0 Conclusion

On September 8 through 11, 2019, EPA, ERT and START V performed Removal Assessment activities at an AOC, Property C008, located in proximity to the Site. As part of the SOW, radiological survey and radon and soil sampling were conducted as part of the Removal Assessment activities.

A mobile, non-intrusive gamma survey was conducted along predetermined paths throughout exterior areas of Property C008 including the parking areas, and locations between the ROW area

and the fenced property boundary between Property C008 and the Site. A total of 17 radon canister samples, including two field duplicates and one field blank, were collected from locations on the first and second floor office spaces and the adjoining vehicle service garage of the single building situated on Property C008 and analyzed for radon. A total of 19 soil samples, including one field duplicate, were collected from nine soil borings advanced via Geoprobe® technology and analyzed by the assigned laboratory for isotopic thorium and isotopic uranium via alpha spectroscopy, other gamma emitting isotopes via gamma spectroscopy, and Ra-226 and Ra-228 via 21-day ingrowth method.

Based on radiological survey data, background gamma levels ranged from 0 to 13 uR/hr (approximately 14 to 20 kcpm. Gamma radiation levels were mostly background in the parking areas and behind the building. The northeast corner of the property, as well as a small portion of the northwest building entrance and the east side of the building had slightly elevated gamma readings, approximately 2x background. One location (C008-SB009) between the ROW area and the fenced property boundary of Property C008 and the Site, had elevated gamma readings that were at least 3x background.

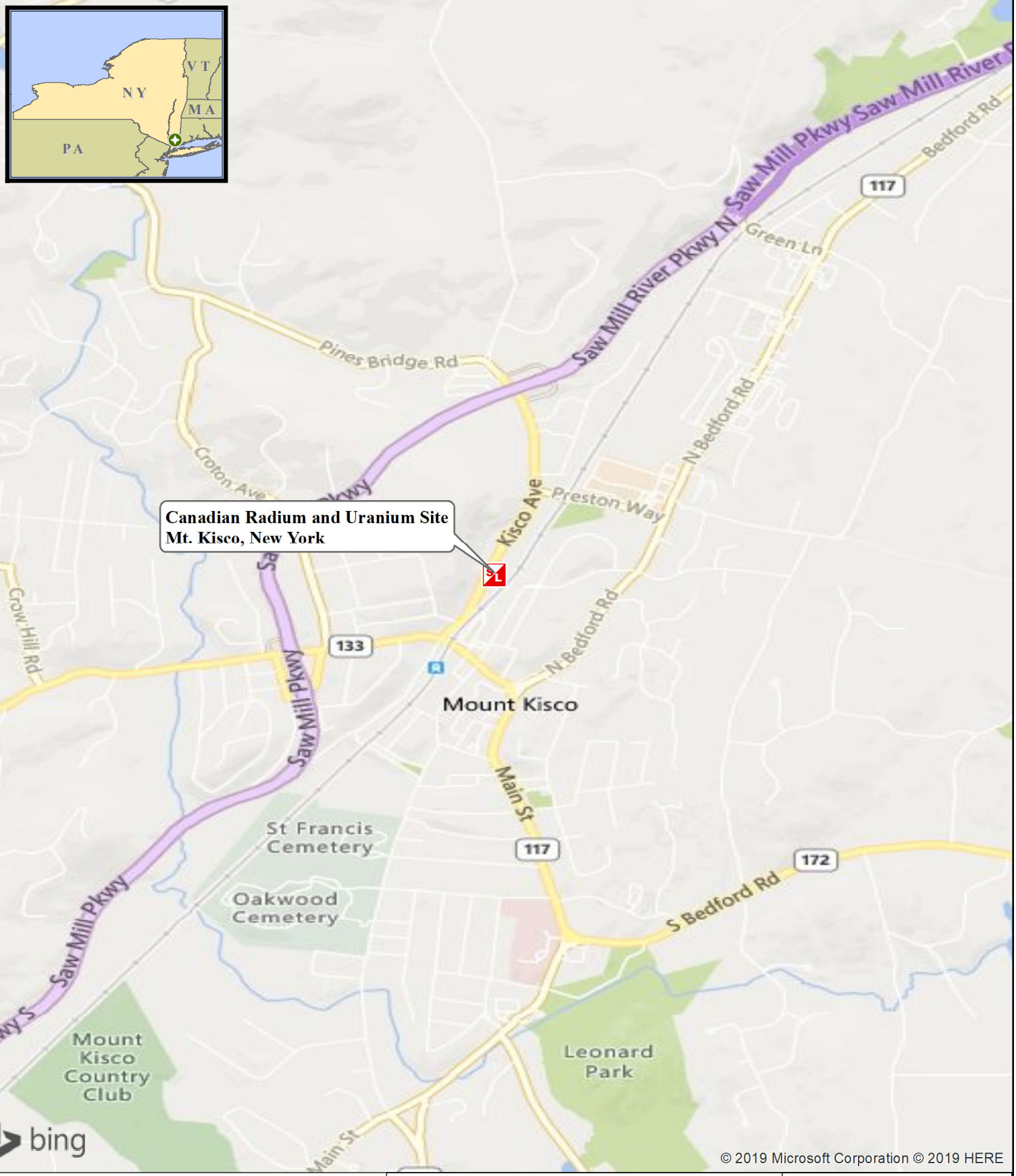
Based on analytical results, radon concentrations were well below the EPA Site-Specific Action Level of 4 pCi/L. Analytical results of the radon samples were compared with the EPA Site-Specific Action Level of 4 pCi/L and analytical results of the soil samples were compared with the EPA Site-Specific Action Levels (revised April 2016). Based on analytical results, 10 of the 19 soil samples, including the one field duplicate, indicated concentrations of Ra-226 exceeding the EPA Site-Specific Action Level of 2.52 pCi/g. Exceedance concentrations of Ra-226 ranged from 2.63 pCi/g in C008-SB002-060072-01 collected at depths 60 to 72 inches bgs to 7.39 pCi/g in C008-SB007-024036-01 collected at depths 24 to 36 inches bgs. Based on analytical results, Ra-226 was not detected at concentrations exceeding the Site-Specific Action level in soil samples collected at depth 0 to 24 inches, 48 to 60 inches, and 108 to 120 inches, bgs. It is noteworthy that the two soil samples collected at depths 0 to 12 and 72 to 84 inches bgs from C008-SB009, did not indicate any exceedance concentrations of Ra-226 despite the elevated gamma readings of at least 3x background noted in this area.

Report prepared by: _____ 04/07/2020
Michael Lang Date
START V CRT Personnel

Report reviewed by: _____ 04/07/2020
Bernard Nwosu Date
START V Group Leader

ATTACHMENT A

Figures



Legend

Site Location

N

0 0.125 0.25 0.5 0.75 1 Miles

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Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 1:
Site Location Map

Canadian Radium and Uranium Site
Mt. Kisco, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	T. BENTON
EPA OSC:	D. GAUGHAN
START V SPM:	B. NWOSU
CHARGE #::	40200.011.032.1030

DATE MODIFIED: 8/13/2019

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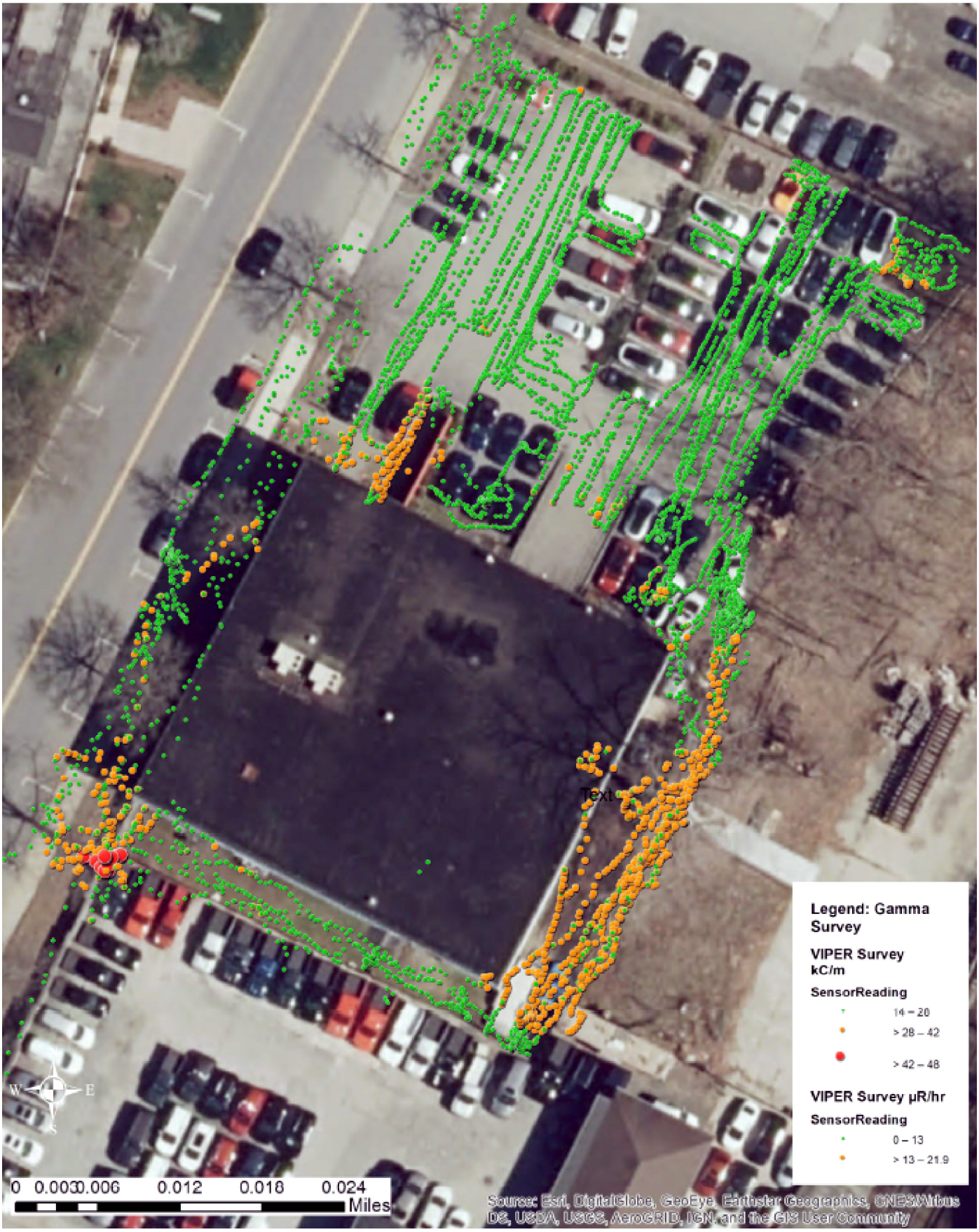

Notes:
» kC/m - kilocounts per minute
» µR/hr - microroentgens per hour

N

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Figure 2: Gamma Survey Results Map

Canadian Radium and Uranium Site
Mt. Kisco, New York

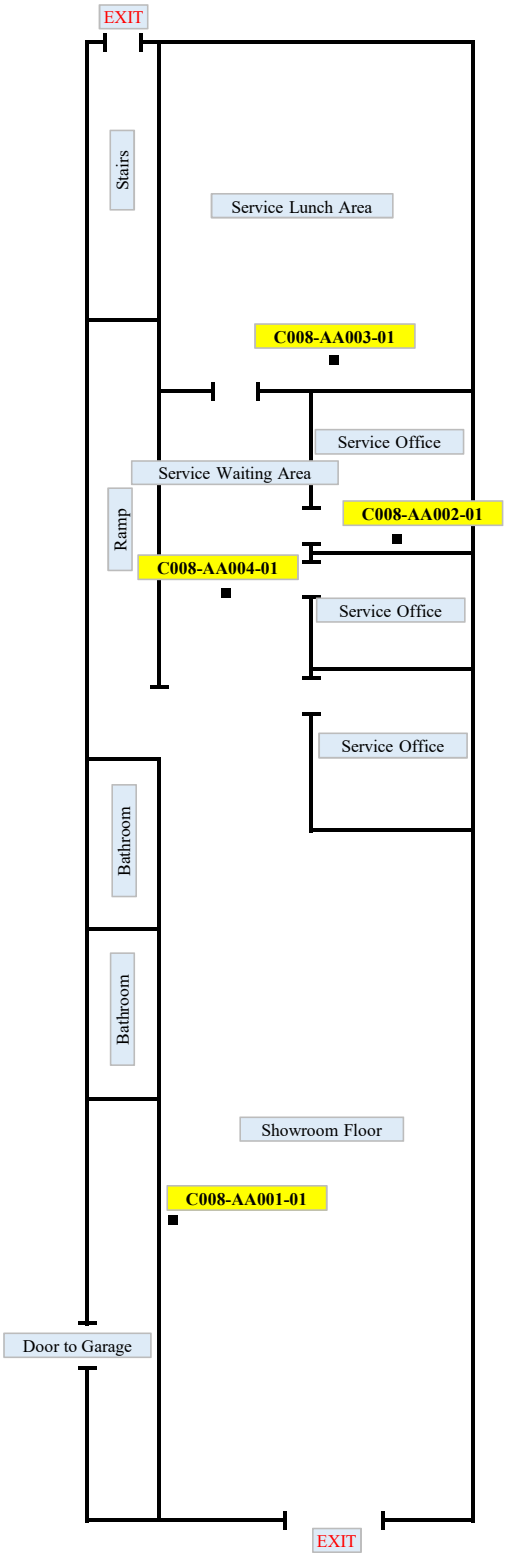
U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	M. LANG
EPA OSC:	D. GAUGHAN
START V SPM:	B. NWOSU
CHARGE #::	40200.011.032.1030

DATE MODIFIED: 3/12/2020

Y:\START_V\00320030\MXD\200311_CRU_GAMMASURVEY.MXD

First Floor



Legend

- Building Wall
- Radon sampling location

Notes:
- Radon sampling was conducted from September 8, 2019 through September 11, 2019
- Figure is not to scale

N

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On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 3A: Property C008 First Floor Radon Sample Location Map

Canadian Radium and Uranium Site
Mt. Kisco, Westchester County, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
Superfund Technical Assessment & Response Team V
CONTRACT # 68HE0319D0004

EPA OSC:	D. Gaughan
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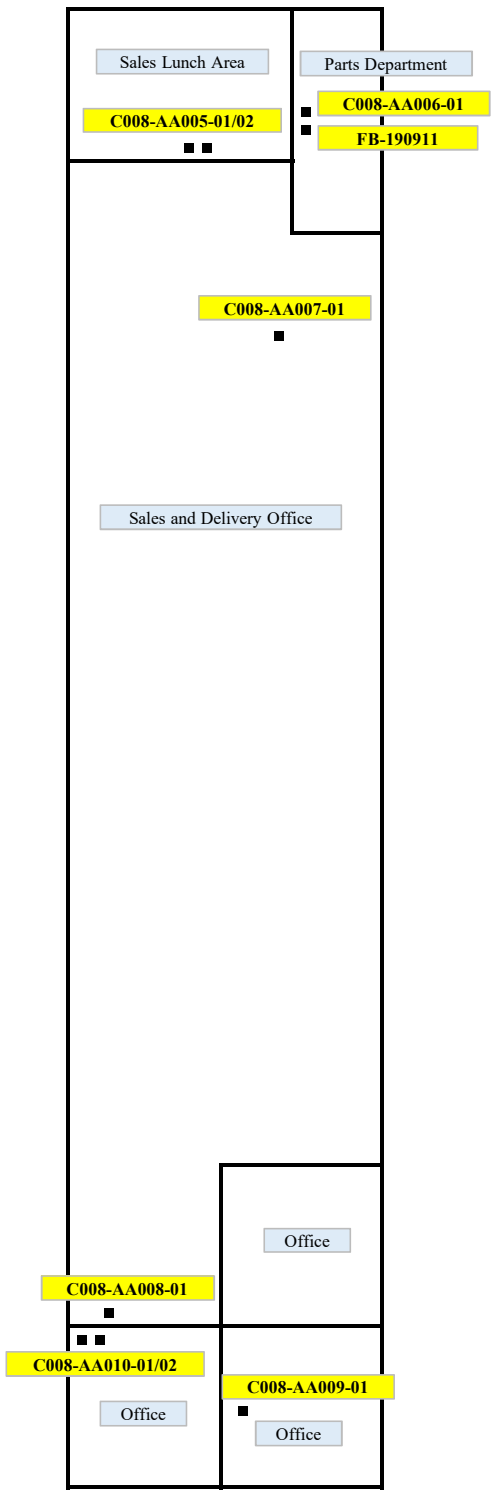
CHARGE #:	40200.011.032.1030

Second Floor



Legend

- Building Wall
- Radon sampling location

Notes:
- Radon sampling was conducted from September 8, 2019 through September 11, 2019
- Figure is not to scale

N

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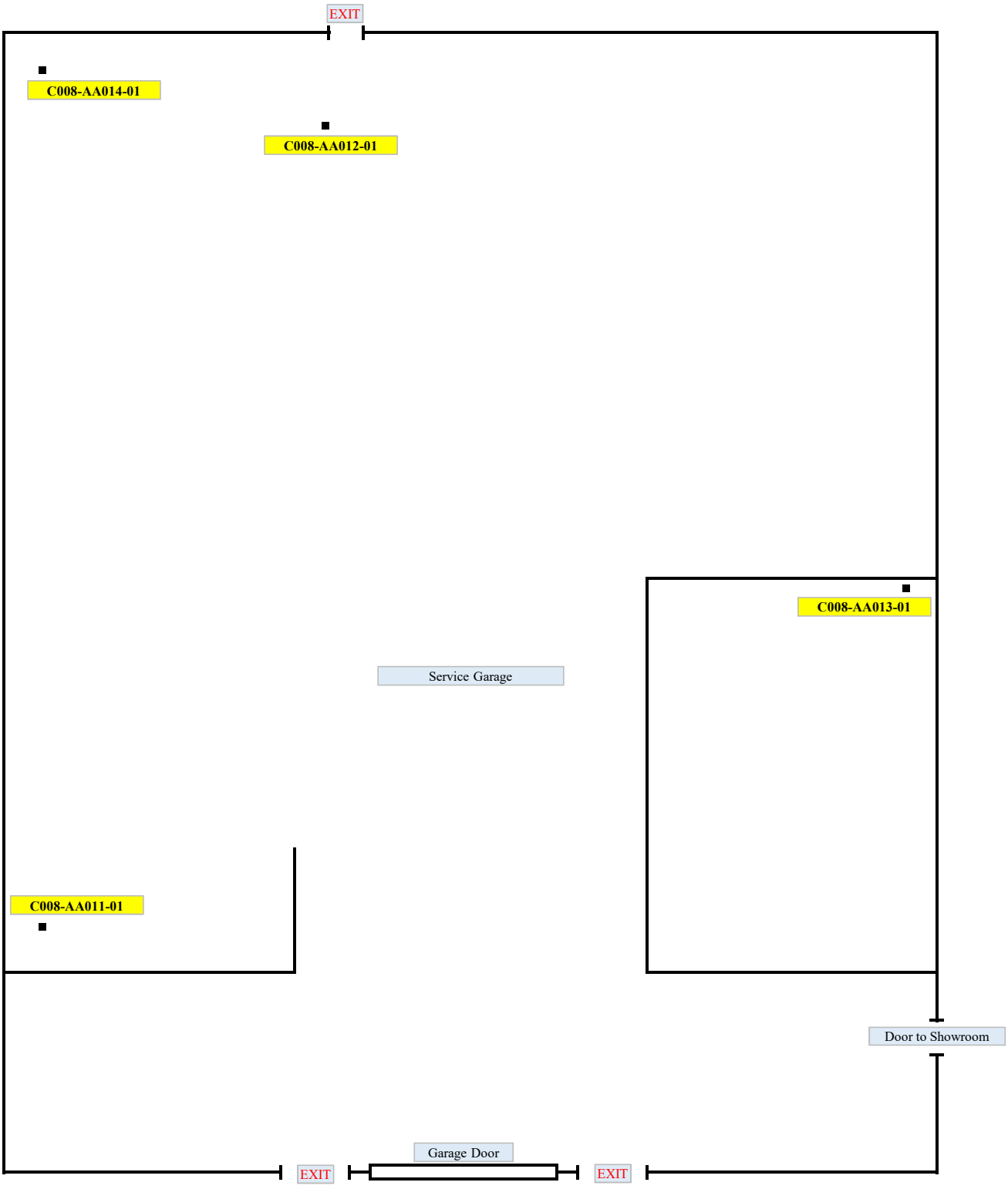
Figure 3B: Property C008 Second Floor Radon Sample Location Map

Canadian Radium and Uranium Site
Mt. Kisco, Westchester County, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
Superfund Technical Assessment & Response Team V
CONTRACT # 68HE0319D0004

EPA OSC:	D. Gaughan
START V SPM:	B. Nwosu
CHARGE #:	40200.011.032.1030

Service Garage



Legend

- Building Wall
- Radon sampling location

Notes:
- Radon sampling was conducted from September 8, 2019 through September 11, 2019
- Figure is not to scale

N

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On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 3C: Property C008 Service Garage Radon Sample Location Map

Canadian Radium and Uranium Site
Mt. Kisco, Westchester County, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
Superfund Technical Assessment & Response Team V
CONTRACT # 68HE0319D0004

EPA OSC:	D. Gaughan
START V SPM:	B. Nwosu
CHARGE #:	40200.011.032.1030

Legend

- Soil Sample Location
- Site Features
- Property Boundary
- Area of Concern

N

0 20 40 80 120 160 Feet

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Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 4: Property C008 Soil Sample Location Map

Canadian Radium and Uranium Site
Mt. Kisco, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	M. LANG
EPA OSC:	D. GAUGHAN
START V SPM:	B. NWOSU
CHARGE #::	40200.011.032.1030

DATE MODIFIED: 3/12/2020

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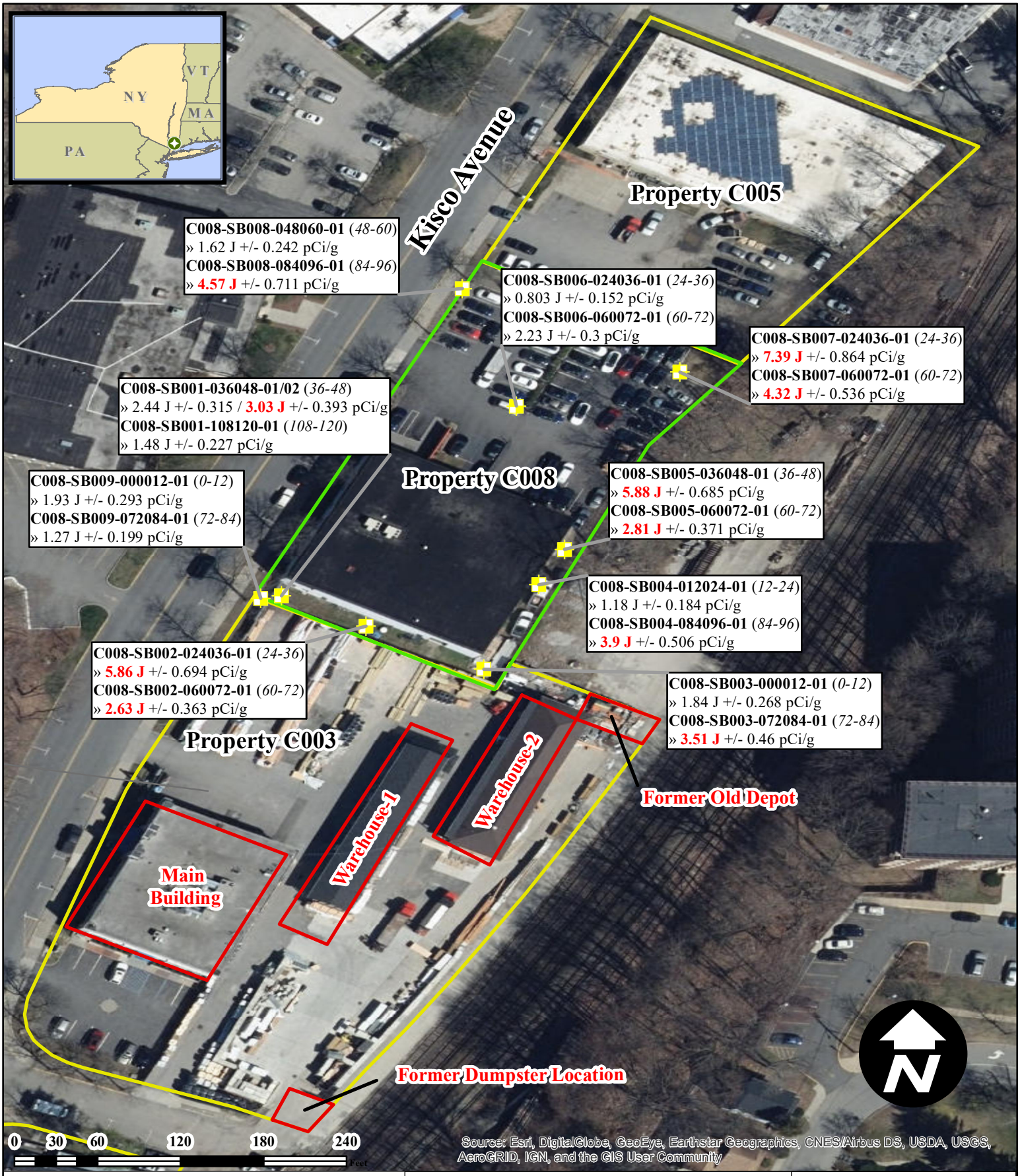

Legend

- Soil Sample Location
- Site Features
- Property Boundary
- Area of Concern

Notes:

- »Results for only Radium-226 (Ra-226) are shown
- »Sample depths in parentheses are depicted in inches
- »pCi/g - picocuries per gram
- »Ra-226 analytical results highlighted in red exceed the U.S. Environmental Protection Agency (EPA) Site-Specific Action Level (SSAL) of 2.52 pCi/g

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On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 5: Property C008 Soil Analytical Results Map (Radium-226 Only)

Canadian Radium and Uranium Site
Mt. Kisco, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

DATE MODIFIED: 3/12/2020

GIS ANALYST:	M. LANG
EPA OSC:	D. GAUGHAN
START V SPM:	B. NWOSU
CHARGE #::	40200.011.032.1030

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ATTACHMENT B

Tables

Table 1: Radon Sample Collection and Validated Analytical Results Summary Table
Canadian Radium and Uranium
Mount Kisco, New York
September 8 through 11, 2019

START V Sample No.	Canister Serial No.	Result (pCi/L)	Error (pCi/L)	Start		Stop		Sample Type	Floor	Location
				Date	Time	Date	Time			
Property C008 - 105 Kisco Avenue										
C008-AA001-01	2701699	0.8	± 0.2	9/8/2019	11:32	9/11/2019	12:33	Field Sample	First	Showroom floor, 265" North and 12" East of Southwest corner on PEI sampling stand
C008-AA002-01	2701311	0.5	± 0.1	9/8/2019	10:45	9/11/2019	12:34	Field Sample	First	Service office, 12" North and 65" West of Southeast corner on desk
C008-AA003-01	2701290	0.5	± 0.2	9/8/2019	10:50	9/11/2019	12:37	Field Sample	First	Service lunch area, 23" North and 120" West of Southeast corner on refrigerator
C008-AA004-01	2701298	0.6	± 0.1	9/8/2019	10:57	9/11/2019	12:36	Field Sample	First	Service waiting area, 178" South and 69" East of Northwest corner on desk
C008-AA005-01	2701719	0.2	± 0.2	9/8/2019	11:00	9/11/2019	12:38	Field Sample	Second	Sales lunch area, 13" North and 88" West of Southeast corner on refrigerator
C008-AA005-02	2701297	0.2	± 0.2	9/8/2019	11:00	9/11/2019	12:38	Field Duplicate	Second	Sales lunch area, 13" North and 88" West of Southeast corner on refrigerator
C008-AA006-01	2701698	0.2	± 0.1	9/8/2019	11:05	9/11/2019	12:39	Field Sample	Second	Parts department, 85" North and 12" East of Southwest corner on shelf
C008-AA007-01	2701273	0.3	± 0.2	9/8/2019	11:10	9/11/2019	12:41	Field Sample	Second	Sales and delivery office, 91" South and 89" West of Northeast corner on table
C008-AA008-01	2701245	0.2	± 0.1	9/8/2019	11:14	9/11/2019	12:43	Field Sample	Second	Sales and delivery office, 16" North and 29" East of Southwest corner on file cabinet
C008-AA009-01	2701287	0.2	± 0.1	9/8/2019	11:17	9/11/2019	12:44	Field Sample	Second	Southeast corner office, 69" North and 12" East of Southwest corner on desk
C008-AA010-01	2701249	0.2	± 0.2	9/8/2019	11:23	9/11/2019	12:46	Field Sample	Second	Southwest corner office, 12" South and 12" East of Northwest corner on desk
C008-AA010-02	2701715	0.3	± 0.2	9/8/2019	11:23	9/11/2019	12:46	Field Duplicate	Second	Southwest corner office, 12" South and 12" East of Northwest corner on desk
C008-AA011-01	2701743	0.2	± 0.1	9/8/2019	11:38	9/11/2019	12:47	Field Sample	First	Service garage, 50" North and 37" East of Southwest corner on air compressor
C008-AA012-01	2701284	0.3	± 0.1	9/8/2019	11:42	9/11/2019	12:51	Field Sample	First	Service garage, 102" South and 370" West of Northeast corner on tool cabinet
C008-AA013-01	2701243	0.4	± 0.2	9/8/2019	11:46	9/11/2019	12:49	Field Sample	First	Service garage locker room, 30" North and 19" West of Southeast corner on refrigerator
C008-AA014-01	2701264	0.2	± 0.1	9/8/2019	11:51	9/11/2019	12:52	Field Sample	First	Service garage, 36" South and 37" East of Northwest corner on workbench
FB-190911	2701281	0.1	± 0.2	9/8/2019	11:05	9/11/2019	12:39	Field Blank	Second	Parts department, 85" North and 12" East of Southwest corner on shelf

Notes:

START V - Superfund Technical Assessment & Response Team V

No. - Number

pCi/L - picocuries per liter

U.S. Environmental Protection Agency's (EPA's) Site-Specific Action Level (SSAL) for radon is 4.0 pCi/L

PEI - Precision Environmental, Inc.

Table 2: Soil Sample Collection and Boring Log Summary Table
Canadian Radium and Uranium
Mount Kisco, New York
September 8 through 11, 2019

Sample Collection						Boring Log			
Sample Date	Sample Location	START V Sample Number	Sample Matrix	Sample Depth (inches)	Sample Type	Depth Top (inches)	Depth Bottom (inches)	Gamma Reading (µR/hr)	Description
9/8/2019	C008-SB001	C008-SB001-036048-01* C008-SB001-036048-02 C008-SB001-108120-01	Soil	36-48 36-48 108-120	Field Sample Field Duplicate Field Sample	0	32	0.00	Dry light brown sandy SILT with some gravel
						32	44	0.00	Dry light brown silty SAND with some gravel
						44	52	0.00	Moist black sandy SILT with some gravel
						52	60	0.00	Dry light grey sandy SILT with some gravel
						60	84	0.00	Dry brown sandy SILT
						84	96	0.00	Moist dark grey silty SAND
						96	108	0.00	Moist dark grey clayey SAND
						108	120	0.00	Saturated black silty SAND
9/8/2019	C008-SB002	C008-SB002-024036-01 C008-SB002-060072-01	Soil	24-36 60-72	Field Sample Field Sample	0	6	0.00	Dry brown silty SAND with roots and organic material
						6	12	0.00	Dry dark grey silty SAND with gravel
						12	20	0.00	Dry light brown silty SAND
						20	24	0.00	Dry light brown and light grey silty SAND with gravel
						24	30	0.00	Moist brown silty SAND
						30	36	0.00	Moist brown silty SAND with fill material comprised of bricks
						36	42	0.00	Moist black silty SAND
						42	44	0.00	Moist dark grey clayey SAND
						44	56	0.00	Dry light grey silty SAND with gravel
						56	60	0.00	Moist black silty SAND
						60	66	0.00	Moist black clayey SAND with trace fill material
						66	74	0.00	Dry light grey sandy SILT
						74	82	0.00	Moist dark grey silty SAND
						82	86	0.00	Saturated dark grey silty SAND
						86	102	0.00	Moist dark brown clayey SILT with organic material (peat)
9/8/2019	C008-SB003	C008-SB003-000012-01 C008-SB003-072084-01	Soil	0-12 72-84	Field Sample Field Sample	0	3	0.00	Brown silty SAND with gravel
						3	12	0.00	Dry light brown silty SAND with some gravel
						12	36	0.00	Dry light brown silty SAND
						36	42	0.00	Dry light brown silty SAND with trace gravel
						42	50	0.00	Moist light grey silty SAND
						50	60	0.00	Moist black silty SAND with white fill material
						60	66	0.00	Dry light brown and dark brown silty SAND with some fill material
						66	72	0.00	Moist black silty SAND with white fill material
						72	76	0.00	Moist black silty SAND with some gravel
						76	80	0.00	Moist dark brown silty SAND
						80	92	0.00	Saturated dark grey and light grey silty SAND with trace gravel
						92	102	0.00	Moist dark brown clayey SILT with organic material (peat)

Notes:
START V - Superfund Technical Assessment & Response Team V
µR/hr - Microroentgen per hour
*Field sample designated as matrix spike/matrix spike duplicate (MS/MSD)
All soil samples analyzed for isotopic thorium and isotopic uranium (via alpha spectroscopy), gamma spectroscopy, and radium-226 and radium-228 (via 21 days ingrowth)

Table 2: Soil Sample Collection and Boring Log Summary Table
Canadian Radium and Uranium
Mount Kisco, New York
September 8 through 11, 2019

Sample Collection						Boring Log			
Sample Date	Sample Location	START V Sample Number	Sample Matrix	Sample Depth (inches)	Sample Type	Depth Top (inches)	Depth Bottom (inches)	Gamma Reading (µR/hr)	Description
9/8/2019	C008-SB004	C008-SB004-012024-01 C008-SB004-084096-01	Soil	12-24 84-96	Field Sample Field Sample	0	8	0.00	Dry light brown SAND with gravel
						8	14	0.00	Dry brown silty SAND with trace fill material
						14	24	0.00	Dry light brown silty SAND with trace gravel
						24	40	0.00	Moist light brown silty SAND with some gravel
						40	60	0.00	Moist black silty SAND
						60	72	0.00	Saturated light brown and dark grey silty SAND
						72	78	0.00	Saturated black SAND with some gravel
						78	86	0.00	Moist dark grey clayey SILT
						86	90	0.00	Saturated dark grey silty SAND with trace gravel
						90	102	0.00	Moist clayey SILT with organic material (peat)
9/8/2019	C008-SB005	C008-SB005-036048-01 C008-SB005-060072-01	Soil	36-48 60-72	Field Sample Field Sample	0	12	0.00	Dry dark brown and light grey silty SAND with gravel
						12	40	0.00	Moist light brown silty SAND
						40	54	0.00	Moist black and light grey silty SAND with fill material
						54	60	0.00	Dry light brown silty SAND
						60	66	0.00	Moist dark grey silty SAND
						66	84	0.00	Saturated SAND with gravel
						84	102	0.00	Moist dark brown clayey SILT with organic material (peat)
9/8/2019	C008-SB006	C008-SB006-024036-01 C008-SB006-060072-01	Soil	24-36 60-72	Field Sample Field Sample	0	6	0.00	Dry GRAVEL and asphalt
						6	24	0.00	Dry light brown sandy SILT with white gravel
						24	36	0.00	Dry white fill material
						36	44	0.00	Moist dark grey clayey SILT
						44	72	0.00	Saturated black SAND with gravel
						72	84	0.00	Saturated dark grey sandy SILT with some gravel
						84	102	0.00	Moist dark brown clayey SILT with organic material (peat)
9/9/2019	C008-SB007	C008-SB007-024036-01 C008-SB007-060072-01	Soil	24-36 60-72	Field Sample Field Sample	0	4	0.00	Moist brown silty SAND with roots and organic material
						4	8	0.00	Moist brown silty SAND with gravel
						8	20	0.00	Moist light brown silty SAND with some gravel
						20	42	0.00	Wet black silty SAND with some fill material
						42	54	0.00	Moist black silty SAND
						54	66	0.00	Moist brown silty SAND
						66	78	0.00	Wet dark grey silty SAND
						78	102	0.00	Moist dark brown clayey SILT with organic material (peat)

Notes:
START V - Superfund Technical Assessment & Response Team V
µR/hr - Microroentgen per hour
All soil samples analyzed for isotopic thorium and isotopic uranium (via alpha spectroscopy), gamma spectroscopy, and radium-226 and radium-228 (via 21 days ingrowth)

Table 2: Soil Sample Collection and Boring Log Summary Table
Canadian Radium and Uranium
Mount Kisco, New York
September 8 through 11, 2019

Sample Collection						Boring Log			
Sample Date	**Sample Location**	**START V Sample Number**	**Sample Matrix**	**Sample Depth (inches)**	**Sample Type**	**Depth Top (inches)**	**Depth Bottom (inches)**	**Gamma Reading (µR/hr)**	**Description**
9/9/2019	C008-SB008	C008-SB008-048060-01 C008-SB008-084096-01	Soil	48-60 84-69	Field Sample Field Sample	0	12	0.00	Dry light brown sandy SILT with some gravel
						12	20	0.00	Dry light brown silty SAND with some fill material
						20	24	0.00	Moist dark grey silty sand with some gravel
						24	36	0.00	Dark grey silty SAND with gravel
						36	42	15.00	Dry white crushed fill material
						42	54	0.00	Moist dark grey silty SAND
						54	60	0.00	Wet dark brown clayey SILT
						60	72	0.00	Wet dark brown silty SAND with some gravel
						72	78	0.00	Moist dark grey sandy SILT
						78	96	14.00	Moist dark brown clayey SILT with organic material (peat)
9/9/2019	C008-SB009	C008-SB009-000012-01 C008-SB009-072084-01	Soil	0-12 72-84	Field Sample Field Sample	0	24	0.00	Dry light brown sandy SILT with white fill material
						24	42	0.00	Dry light brown sandy SILT with trace gravel
						42	56	0.00	Moist dark grey silty SAND with trace gravel
						56	64	0.00	Moist black silty SAND with some gravel
						64	80	0.00	Moist light brown and dark grey silty SAND with some gravel
						80	90	0.00	Wet dark brown clayey SILT with organic material and some gravel (peat)
						90	96	0.00	Moist dark brown clayey SILT with organic material (peat)
9/8/2019	Not Applicable	RB-190908	DI Water	Not Applicable	Rinsate Blank	Not Applicable			
9/9/2019		RB-190909							

Notes:
START V - Superfund Technical Assessment & Response Team V
µR/hr - Microroentgen per hour
DI - Deionized
*Field sample designated as matrix spike/matrix spike duplicate (MS/MSD)
All soil samples analyzed for isotopic thorium and isotopic uranium (via alpha spectroscopy), gamma spectroscopy, and radium-226 and radium-228 (via 21 days ingrowth)
All rinsate blanks analyzed for isotopic thorium and isotopic uranium (via alpha spectroscopy), and gamma spectroscopy

Table 3: Validated Soil Analytical Results - Radioisotopes Summary Table
Canadian Radium and Uranium Corp. Site
Mount Kisco, New York
September 2019

	Location No.		C008-SB001									C008-SB002						C008-SB003						C008-SB004		
	START V Sample No.		C008-SB001-036048-01			C008-SB001-036048-02			C008-SB001-108120-01			C008-SB002-024036-01			C008-SB002-060072-01			C008-SB003-000012-01			C008-SB003-072084-01			C008-SB004-012024-01		
	Sample Depth (inches)		36-48			36-48			108-120			24-36			60-72			0-12			72-84			12-24		
	Sample Matrix		Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
	Sample Date		9/8/2019			9/8/2019			9/8/2019			9/8/2019			9/8/2019			9/8/2019			9/8/2019			9/8/2019		
Radioisotope	**Analytical Method**	**[1]EPA SSAL (pCi/g)**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**
Bismuth-212 (Bi-212)*	NAREL GAM-01-RA	6,440,000	0.841	J	0.162	0.846	J	0.14	1.01	J	0.16	1.05	J	0.186	0.845	J	0.172	0.908	J	0.171	2.34	J	0.302	0.79	J	0.134
Bismuth-214 (Bi-214)*		1,310,000	1.66	J	0.181	2.09	J	0.227	0.598	J	0.0702	4.24	J	0.457	1.87	J	0.207	0.932	J	0.104	1.71	J	0.189	0.585	J	0.066
Cesium-137 (Cs-137)*		11.20	0.0182		0.00516	0.0208		0.0088	-0.00525		0.00736	0.0929		0.0143	0.0286		0.0101	0.0276		0.00712	-0.0063		0.0103	0.0287		0.00649
Potassium-40 (K-40)*		26.7	17.1		1.860	17.2		1.87	11.2		1.23	12.4		1.36	10.5		1.18	15.2		1.66	11		1.23	12.8		1.39
Lead-210 (Pb-210)*		418	1.91	J	0.318	2.00	J	0.314	0.55	J	0.135	4.52	J	0.596	2.3	J	0.36	1.03	J	0.243	1.17	J	0.196	0.676	J	0.177
Lead-212 (Pb-212)*		657,000	0.953	J	0.106	0.719	J	0.0803	0.974	J	0.109	0.899	J	0.101	0.746	J	0.0837	0.887	J	0.100	2.22	J	0.245	0.858	J	0.0953
Lead-214 (Pb-214)*		7,330,000	1.94	J	0.211	2.40	J	0.261	0.716	J	0.0815	4.83	J	0.522	2.15	J	0.237	1.07	J	0.119	1.92	J	0.226	0.687	J	0.0769
Radium-226 (Ra-226)*		2.52	2.44	J	0.315	**3.03**	**J**	**0.393**	1.48	J	0.227	**5.86**	**J**	**0.694**	**2.63**	**J**	**0.363**	1.84	J	0.268	**3.51**	**J**	**0.46**	1.18	J	0.184
Radium-228 (Ra-228)*		16.2	0.683		0.0789	0.787		0.0937	0.855		0.0993	0.97		0.116	0.778		0.0926	0.8		0.0949	2.29		0.255	0.727		0.0821
Thorium-228 (Th-228)*		13,300	NA			NA			NA			NA			NA			NA			NA			NA		
Thorium-234 Th-234)*		47,500	0.491	J	0.213	0.532	J	0.193	0.753	J	0.168	0.977	J	0.283	0.731	J	0.232	0.573	J	0.225	1.74	J	0.245	0.646	J	0.185
Thallium-208 (Tl-208)*		3,400,000	0.222	J	0.0268	0.270	J	0.0318	0.261	J	0.032	0.328	J	0.0393	0.229	J	0.027	0.238	J	0.028	0.722	J	0.0811	0.227	J	0.0258
Uranium-235 (U-235)*		37.7	0.0215		0.046	0.0493	J	0.0556	0.0933	J	0.0502	0.0851	J	0.0707	-0.0273		0.0548	0.00506		0.0346	0.187	J	0.0657	0.0181		0.036
Thorium-227 (Th-227)	NAREL ACT-02F-TH	NS	0.0293		0.0263	0.0603		0.039	0.025		0.025	0.049		0.0346	0.0671		0.0397	0.0123		0.022	0.168		0.086	0.0403		0.0324
Thorium-228 (Th-228)		13,300	0.632		0.102	0.597		0.104	0.817		0.123	0.951		0.139	0.641		0.106	0.703		0.114	1.94		0.325	0.844		0.128
Thorium-230 (Th-230)		2,060	0.601		0.105	0.643		0.114	0.76		0.122	1.25		0.174	0.741		0.122	0.493		0.0964	1.87		0.319	0.619		0.11
Thorium-232 Th-232)		5	0.573		0.0956	0.567		0.100	0.756		0.117	0.906		0.134	0.621		0.104	0.637		0.106	2.14		0.352	0.838		0.128
Uranium-234 (U-234)	NAREL ACT-02F-U	3,260	0.444	U	0.092	0.420	U	0.0856	0.815	U	0.124	0.688	U	0.125	0.527	U	0.102	0.407	U	0.0853	1.75	U	0.242	0.506	U	0.107
Uranium-235 (U-235)		37.7	0.0287		0.025	0.0357		0.0258	0.0503		0.0286	0.0412		0.0298	0.0225		0.0231	0.048		0.0308	0.0999		0.0446	0.0261		0.0312
Uranium-238 (U-238)		158	0.556		0.106	0.355		0.0776	0.696		0.111	0.782		0.137	0.604		0.111	0.433		0.0883	1.78		0.246	0.529		0.11

	Location No.		C008-SB004			C008-SB005						C008-SB006						C008-SB007						C008-SB008		
	START V Sample No.		C008-SB004-084096-01			C008-SB005-036048-01			C008-SB005-060072-01			C008-SB006-024036-01			C008-SB006-060072-01			C008-SB007-024036-01			C008-SB007-060072-01			C008-SB008-048060-01		
	Sample Depth (inches)		84-96			36-48			60-72			24-36			60-72			24-36			60-72			48-60		
	Sample Matrix		Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
	Sample Date		9/8/2019			9/8/2019			9/8/2019			9/8/2019			9/8/2019			9/9/2019			9/9/2019			9/9/2019		
Radioisotope	**Analytical Method**	**[1]EPA SSAL (pCi/g)**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**	**Result (pCi/g)**	**Qualifier**	**Total Uncertainty**
Bismuth-212 (Bi-212)*	NAREL GAM-01-RA	6,440,000	2.45	J	0.349	0.98	J	0.195	1.08	J	0.158	0.84	J	0.13	1.38	J	0.19	1.04	J	0.198	1.05	J	0.196	0.769	J	0.147
Bismuth-214 (Bi-214)*		1,310,000	1.6	J	0.176	4.54	J	0.489	1.81	J	0.197	0.371	J	0.044	1.2	J	0.132	5.34	J	0.586	2.97	J	0.327	0.888	J	0.0983
Cesium-137 (Cs-137)*		11.20	-0.00876		0.0115	0.0548		0.0118	0.0164		0.00731	0.00378		0.00589	0.0101		0.00566	-0.00692		0.0136	0.0124		0.0061	0.00917		0.00514
Potassium-40 (K-40)*		26.7	9.98		1.12	13.1		1.42	14.2		1.55	23.6		2.56	14.1		1.53	5.01		0.582	12.1		1.34	13.9		1.51
Lead-210 (Pb-210)*		418	1.46	J	0.236	4.81	J	0.621	2.03	J	0.34	0.424	J	0.18	0.618	J	0.126	4.27	J	0.528	3.53	J	0.49	0.873	J	0.184
Lead-212 (Pb-212)*		657,000	2.25	J	0.244	0.797	J	0.0904	0.927	J	0.103	0.875	J	0.0973	1.24	J	0.135	0.989	J	0.114	0.887	J	0.0998	0.771	J	0.0868
Lead-214 (Pb-214)*		7,330,000	1.98	J	0.217	5.23	J	0.565	2.06	J	0.224	0.446	J	0.0522	1.37	J	0.158	6.44	J	0.705	3.41	J	0.376	1.02	J	0.113
Radium-226 (Ra-226)*		2.52	**3.9**	**J**	**0.506**	**5.88**	**J**	**0.685**	**2.81**	**J**	**0.371**	0.803	J	0.152	2.23	J	0.3	**7.39**	**J**	**0.864**	**4.32**	**J**	**0.536**	1.62	J	0.242
Radium-228 (Ra-228)*		16.2	2.17		0.24	0.85		0.0994	1.01		0.117	0.754		0.0851	1.27		0.142	0.939		0.109	0.891		0.105	0.718		0.0861
Thorium-228 (Th-228)*		13,300	5.45		2.81	NA			NA			NA			NA			NA			NA			NA		
Thorium-234 Th-234)*		47,500	1.91	J	0.269	0.742	J	0.254	0.976	J	0.26	0.545	J	0.183	0.863	J	0.191	0.98	J	0.191	0.89	J	0.209	0.363	J	0.166
Thallium-208 (Tl-208)*		3,400,000	0.669	J	0.075	0.282	J	0.0319	0.321	J	0.0366	0.237	J	0.0273	0.396	J	0.0447	0.264	J	0.0306	0.291	J	0.0364	0.212	J	0.0255
Uranium-235 (U-235)*		37.7	0.159	J	0.0597	0.0773	J	0.0673	0.0773	J	0.048	0.0149		0.0369	0.102	J	0.0495	-0.0423		0.076	-0.0217		0.0707	0.0383	J	0.0402
Thorium-227 (Th-227)	NAREL ACT-02F-TH	NS	0.0592		0.039	0.0558		0.033	0.0534		0.0363	0.032		0.0333	0.0849		0.0449	0.0874		0.0316	0.0481		0.0321	0.0276		0.0283
Thorium-228 (Th-228)		13,300	1.67		0.221	0.684		0.103	0.966		0.143	0.679		0.114	1.4		0.186	0.882		0.111	0.733		0.11	0.603		0.102
Thorium-230 (Th-230)		2,060	1.49		0.205	1.82		0.216	0.961		0.147	0.398		0.0887	1.31		0.18	2.07		0.231	1.29		0.17	0.419		0.0878
Thorium-232 Th-232)		5	1.76		0.23	0.735		0.108	0.984		0.145	0.551		0.0994	1.26		0.171	0.85		0.108	0.628		0.0995	0.538		0.0939
Uranium-234 (U-234)	NAREL ACT-02F-U	3,260	1.91	U	0.252	0.725	U	0.128	0.921	U	0.163	0.377	U	0.0855	1.10	U	0.181	0.92		0.124	0.591		0.108	0.439		0.0971
Uranium-235 (U-235)		37.7	0.0641		0.0351	0.0265		0.0239	0.0304		0.0292	0.00911		0.0193	0.0371		0.0314	0.04		0.0194	0.0134		0.0187	0.0445		0.0322
Uranium-238 (U-238)		158	1.96		0.258	0.673		0.122	0.823		0.151	0.379		0.0855	1.09		0.179	0.848		0.116	0.567		0.105	0.441		0.0971

Notes:

START V - Superfund Technical Assessment & Response Team V

No. - Number; U - Not detected; J - Estimated result

pCi/g - picocuries per gram; NA - Not analyzed; NS - Not specified

*Analysis via 21-days ingrowth Method

[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSAL) are presented in pCi/g

Result equals or exceeds the EPA SSAL

Table 3: Validated Soil Analytical Results - Radioisotopes Summary Table
Canadian Radium and Uranium Corp. Site
Mount Kisco, New York
September 2019

	Location No.		C008-SB008			C008-SB009					
	START V Sample No.		C008-SB008-084096-01			C008-SB009-000012-01			C008-SB009-072084-01		
	Sample Depth (inches)		84-96			0-12			72-84		
	Sample Matrix		Soil			Soil			Soil		
	Sample Date		9/9/2019			9/9/2019			9/9/2019		
Radioisotope	Analytical Method	[1]EPA SSAL (pCi/g)	Result (pCi/g)	Qualifier	Total Uncertainty	Result (pCi/g)	Qualifier	Total Uncertainty	Result (pCi/g)	Qualifier	Total Uncertainty
Bismuth-212 (Bi-212)*	NAREL GAM-01-RA	6,440,000	0.889	J	0.334	1.04	J	0.189	0.803	J	0.132
Bismuth-214 (Bi-214)*		1,310,000	2.02	J	0.228	0.981	J	0.109	0.628	J	0.0705
Cesium-137 (Cs-137)*		11.20	0.0127		0.0169	0.0304		0.00802	-0.00369		0.00549
Potassium-40 (K-40)*		26.7	4.32		0.572	14.2		1.55	13.2		1.43
Lead-210 (Pb-210)*		418	2.76	J	0.41	1.06	J	0.232	0.776	J	0.201
Lead-212 (Pb-212)*		657,000	0.525	J	0.0687	0.934	J	0.105	0.809	J	0.0903
Lead-214 (Pb-214)*		7,330,000	2.55	J	0.284	1.11	J	0.124	0.747	J	0.0834
Radium-226 (Ra-226)*		2.52	**4.57**	**J**	**0.711**	1.93	J	0.293	1.27	J	0.199
Radium-228 (Ra-228)*		16.2	0.541		0.105	0.817		0.0943	0.692		0.0784
Thorium-228 (Th-228)*		13,300	NA			NA			NA		
Thorium-234 Th-234)*		47,500	1.57	J	0.365	0.665	J	0.187	0.471	J	0.17
Thallium-208 (Tl-208)*		3,400,000	0.203	J	0.0358	0.258	J	0.0304	0.213	J	0.0248
Uranium-235 (U-235)*		37.7	0.0325		0.0809	0.0355	J	0.0431	0.00258		0.0363
Thorium-227 (Th-227)	NAREL ACT-02F-TH	NS	0.0356		0.018	0.0273		0.0272	0.0196		0.0211
Thorium-228 (Th-228)		13,300	0.482		0.0681	0.913		0.137	0.447		0.0765
Thorium-230 (Th-230)		2,060	0.709		0.0934	0.744		0.125	0.769		0.114
Thorium-232 Th-232)		5	0.455		0.0651	0.829		0.129	0.463		0.0783
Uranium-234 (U-234)	NAREL ACT-02F-U	3,260	2.02		0.219	0.456		0.0956	0.452		0.0939
Uranium-235 (U-235)		37.7	0.0776		0.023	0.0684		0.0381	0.0279		0.0258
Uranium-238 (U-238)		158	1.47		0.164	0.54		0.106	0.427		0.0906

Notes:
START V - Superfund Technical Assessment & Response Team V
No. - Number; U - Not detected; J - Estimated result
pCi/g - picocuries per gram; NA - Not analyzed; NS - Not specified
*Analysis via 21-days ingrowth Method
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSAL) are presented in pCi/g
Result equals or exceeds the EPA SSAL

	Location No.		Rinsate Blank					
	START V Sample No.		RB-190908			RB-190909		
	Sample Depth (inches)		NA			NA		
	Sample Matrix		Aqueous			Aqueous		
	Sample Date		9/8/2019			9/9/2019		
Radioisotope	Analytical Method	[1]EPA SSAL (pCi/L)	Result (pCi/L)	Qualifier	Total Uncertainty	Result (pCi/L)	Qualifier	Total Uncertainty
Bismuth-212 (Bi-212)	NAREL GAM-01	15	1.69		10.4	3.52		6.65
Bismuth-214 (Bi-214)		15	1.53	J	2	0.522		1.61
Cesium-137 (Cs-137)		12.3	0.169		0.793	-0.0554		0.594
Potassium-40 (K-40)		29.7	-1.05		9.76	3.83		5.73
Lead-210 (Pb-210)		15	-0.411		15.1	-1.46		17.2
Lead-212 (Pb-212)		15	-0.252		1.29	0.223		1.22
Lead-214 (Pb-214)		15	-0.559		1.93	1.01		1.47
Radium-226 (Ra-226)		5	13.5	J	14.3	-4.56		23.4
Radium-228 (Ra-228)		0.702	1.87		2.85	-1.71		10.9
Thorium-228 (Th-228)		15	NA			NA		
Thorium-234 Th-234)		135	8.47		18.2	8.31		16.9
Thallium-208 (Tl-208)		4	0.207		0.777	0.387		0.626
Uranium-235 (U-235)		15	-2.54		5.7	0.719		4.36
Thorium-227 (Th-227)	NAREL TH-EICHROM	NS	0		0.0562	0		0.0582
Thorium-228 (Th-228)		15	0.0143		0.0559	0.072		0.0859
Thorium-230 (Th-230)		15	-0.0856		0.151	-0.016		0.164
Thorium-232 Th-232)		15	0.0213		0.0541	0.0117		0.0453
Uranium-234 (U-234)	NAREL U-EICHROM	15	0.136		0.097	0.0193		0.0529
Uranium-235 (U-235)		15	0		0.0382	0.0347		0.0733
Uranium-238 (U-238)		15	0.0656		0.0764	0.0386		0.0596

Notes:
START V - Superfund Technical Assessment & Response Team V
No. - Number; J - Estimated result
pCi/L - picocuries per liter; NA - Not analyzed; NS - Not specified
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSAL)
Result equals or exceeds the EPA SSAL

ATTACHMENT C

Photographic Documentation Log

Photographic Documentation Log
Canadian Radium and Uranium
Mount Kisco, New York
September 8 through 11, 2019

Photograph 1: View of radon sampling location C008-AA001 in the showroom on the first floor of the building at Property C008, an area of concern (AOC) located adjacent to the Candian Radium and Uranium Site (the Site). Radon canisters were set up at each sampling location for approximately 72 hours. Radon sampling was conducted by a National Radon Proficiency Program (NRPP)-certified company procured by Weston Solutions Inc., Superfund Technical Assessment & Response Team V (START V).

Photograph 2: View of radon sampling location C008-AA009 in the southeast corner office on the second floor of the building at Property C008. Radon concentrations throughout the building were normal, below 4.0 picocuries per liter (pCi/L).

Photograph 3: View of the U.S. Environmental Protection Agency's (EPA's) Environmental Response Team (ERT) performing ground radiological survey at Property P008 utilizing a combination of the RSX1 system comprising a 4x4x16 sodium iodide (NaI) scintillator connected to the RadAssist Software and two sets of Ludlum-2241s and 3x3 NaI scintillators connected to EPA's VIPER system (a wireless network-based communication system).

Photograph 4: View of soil sampling location C008-SB009 at Property C008. Ground penetrating radar (GPR) was utilized by START V drilling subcontractor to clear subsurface utilities around the selected sampling locations prior to advancing soil borings.

Photograph 5: View of soil sampling location C008-SB001 at Property C008. Soil borings were advanced at each soil sampling location using Geoprobe® technology.

Photograph 6: View of soil cores collected from soil sampling location C008-SB008 at Property C008. A Ludlum-2241 was utilitzed to the screen soil cores for gamma radiation levels. Soil samples were selected from the 12 inch intervals exhibiting the highest level of gamma radiation and/or where a fill layer was observed and/or at the discretion of the EPA OSC.

Photograph 6: Gamma radiation levels were mostly background in the parking areas and behind the building. View of the northeast corner of the property, where slightly elevated gamma readings, approximately 2x (2 times) background, was noted.

Photograph 6: View of the location between the right of way area and the fenced property boundary between Property C008 and the Site, where elevated gamma readings that were at least 3x background, was noted.

ATTACHMENT D

Chain of Custody Record

USEPA
DateShipped: 9/9/2019
CarrierName: FedEx
AirbillNo: 7761-9080-7836

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: 908-565-2980

No: 2-090919-0032-0030-0001
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: 343-270-3433

Lab #	Sample #	Location	Matrix	Analyses	Sample Date	Sample Time	Numb Cont	Container	Preservative	Lab QC
	C008-SB001-036048-01	C008-SB001	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	14:10	2	32 oz poly	None	Y
	C008-SB001-036048-02	C008-SB001	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	14:10	1	32 oz poly	None	N
	C008-SB001-108120-01	C008-SB001	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	14:15	1	32 oz poly	None	N
	C008-SB002-024036-01	C008-SB002	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	15:25	1	32 oz poly	None	N
	C008-SB002-060072-01	C008-SB002	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	15:30	1	32 oz poly	None	N
	C008-SB003-000012-01	C008-SB003	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	16:15	1	32 oz poly	None	N
	C008-SB003-072084-01	C008-SB003	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	16:20	1	32 oz poly	None	N
	C008-SB004-012024-01	C008-SB004	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	16:50	1	32 oz poly	None	N
	C008-SB004-084096-01	C008-SB004	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	16:55	1	32 oz poly	None	N
	C008-SB005-036048-01	C008-SB005	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	17:35	1	32 oz poly	None	N
	C008-SB005-060072-01	C008-SB005	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	17:40	1	32 oz poly	None	N
	C008-SB006-024036-01	C008-SB006	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	18:15	1	32 oz poly	None	N
	C008-SB006-060072-01	C008-SB006	Soil	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	18:20	1	32 oz poly	None	N
	C008-SB007-024036-01	C008-SB007	Soil	Alpha Spec (U, Th) & Gamma Spec	9/9/2019	08:20	1	32 oz poly	None	N
	C008-SB007-060072-01	C008-SB007	Soil	Alpha Spec (U, Th) & Gamma Spec	9/9/2019	08:25	1	32 oz poly	None	N
	C008-SB008-048060-01	C008-SB008	Soil	Alpha Spec (U, Th) & Gamma Spec	9/9/2019	09:35	1	32 oz poly	None	N
	C008-SB008-084096-01	C008-SB008	Soil	Alpha Spec (U, Th) & Gamma Spec	9/9/2019	09:40	1	32 oz poly	None	N
	C008-SB009-000012-01	C008-SB009	Soil	Alpha Spec (U, Th) & Gamma Spec	9/9/2019	10:00	1	32 oz poly	None	N
	C008-SB009-072084-01	C008-SB009	Soil	Alpha Spec (U, Th) & Gamma Spec	9/9/2019	10:05	1	32 oz poly	None	N

Special Instructions: Please email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com. Samples to be run for isotopic thorium via NAREL ACT-02FTH, Isotopic Uranium via NAREL ACT-02F-U, other gamma isotopes via NAREL GM-01-RA, and Radium-226 and Radium-228 via 21-day ingrowth. 60 day TAT.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples/ All Analyses	WESTON STAMETV	09/9/2019 1500			

USEPA
DateShipped: 9/9/2019
CarrierName: FedEx
AirbillNo: 7761-9080-7836

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: 908-565-2980

No: 2-090919-0032-0030-0001
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: 343-270-3433

Lab #	Sample #	Location	Matrix	Analyses	Sample Date	Sample Time	Numb Cont	Container	Preservative	Lab QC
	RB-190908	RB-190908	Blank	Alpha Spec (U, Th) & Gamma Spec	9/8/2019	16:00	4	1 L poly	HNO3 pH<2	N
	RB-190909	RB-190909	Blank	Alpha Spec (U, Th) & Gamma Spec	9/9/2019	09:00	4	1 L poly	HNO3 pH<2	N

Special Instructions: Please email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com. Samples to be run for isotopic thorium via NAREL ACT-02FTH, Isotopic Uranium via NAREL ACT-02F-U, other gamma isotopes via NAREL GM-01-RA, and Radium-226 and Radium-228 via 21-day ingrowth. 60 day TAT.

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples/ All Analysis	Weston START V	9/9/2019 1500			

ATTACHMENT E

Data Validation Report

Weston Solutions, Inc.
1090 King Georges Post Road, Suite 201
Edison, New Jersey 08837-3703
Phone: 732-585-4400
www.westonsolutions.com

SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
EPA CONTRACT NO.: 68HE0319D0004

START V-01-F-0025

TRANSMITTAL MEMO

To:	Mr. Daniel Gaughan, On-Scene Coordinator Emergency and Remedial Response Division U.S. EPA, Region II
From:	Smita Sumbaly, Data Reviewer START V, Region II
Subject:	Canadian Radium and Uranium Site Data Validation Assessment
Date:	October 4, 2019

The purpose of this memo is to transmit the following information:

- Data validation results for the following parameters:

Radon Testing	17 Samples

- Matrices and Number of Samples

Air	16 Samples
Air-Unexposed Field Blank	1 Samples

- Sampling Dates: September 8 through 11, 2019

The final data assessment narrative and original analytical data package are attached.

cc:	START V SPM:	Bernard Nwosu
	START V SITE FILE TD #:	TO-0032-0030
	START V ANALYTICAL TD #:	TO-0032-0069
	TASK#:	1069

U.S. ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

DATE: **October 4, 2019**

TO: **Mr. Daniel Gaughan, On-Scene Coordinator**
U.S. EPA, Region II

FROM: **Smita Sumbaly**
START V Data Review Team

SUBJECT: **QA/QC Compliance Review Summary**

As requested quality control and performance measures for the data packages noted have been examined and compared to the U.S. Environmental Protection Agency, Region II (EPA) standards for compliance. Measures for the following general areas were evaluated as applicable:

Field Blank
Field Duplicates
Data Completeness

Any statistical measures used to support the following conclusions are attached so that the information may be reviewed by others.

Summary of Results

Radon Testing

Acceptable as Submitted	X
Acceptable with Comments	
Unacceptable, Action Pending	
Unacceptable	

Data Reviewed by: Smita Sumbaly Date: 10/4/19

Approved By: Date: 10/4/19

Area Code/Phone No.: (732) 585-4410

NARRATIVE

PCS No. 1069

SITE NAME: **Canadian Uranium and Radium Site**
Mount Kisco
Westchester County
New York

Laboratory Name: Precision Environmental, Inc., 36-15A 23rd Street, Long Island City, NY 11106 (deploy and retrieve canisters) and Radon Testing Corporation of America (RTCA), 2 Hayes Street, Elmsford, NY 10523 (Radon Testing).

INTRODUCTION:

The laboratory's portion of this case consisted of 17 air samples, including one field blank and two field duplicates, for Radon testing. All the samples were collected on September 8 through 11, 2019.

The laboratory reported No problem(s) with the receipt of these samples:

The laboratory reported No problems with the analyses of Radon Testing.

The evaluator has commented on the criteria specified under each fraction heading. All criteria have been assessed, but no discussion is given where the evaluator has determined that criteria were adequately performed or require no comment. Details relevant to these comments are given on the following forms.

Appropriate Form Is and Chain of Custody have been copied from the original data package and appended to the data assessment narrative for reference.

Inorganic Data Review Narrative

RFP# 606 **TASK # 1069**	**Site: Canadian Uranium and Radium Site**	**Matrix** **Air: 17**
Sampling Team: Precision Environmental Inc. **Laboratory: Radon Testing Corporation of America (RTCA)**		
Reviewer: Smita Sumbaly		
CONTRACTOR: Weston Solutions, Inc., Superfund Technical Assessment & Response Team V (START V)		

Data Case Description:

On September 8, 2019, U.S. Environmental Protection Agency, Region II (EPA) and START V-subcontracted sampling personnel collected 17 air samples, including one field blank and two field duplicates (co-located samples), from the Canadian Uranium and Radium Site located in Mount Kisco, Westchester County, New York. START V subcontracted the services of Precision Environmental, Inc. to deploy and retrieve activated charcoal canisters (ACC), and submit them to RTCA for radon testing. Charcoal Canisters were deployed on September 8, 2019, retrieved on September 11, 2019, and shipped to RTCA, located at 2 Hayes Street, Elmsford, New York, for radon testing.

All the 17 air samples, including two field duplicates and one field blank, were collected using ACCs for at least 72 hours period of time. The air samples were collected from the Tesla Dealership located at 125 Kisco Avenue, Mount Kisco, New York. (First and second floor). Field duplicates were placed next to field samples, approximately 4 inches apart, as co-located samples.

Radon testing was performed in accordance with the American National Standards institute (ANSI)/American Association of Radon Scientists and Technologist (AARST) MAMF 2012 "Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings". The placement of the ACCs was determined by the radon-certified technician and the EPA On-Scene Coordinator (OSC).

Client identification (ID) and laboratory ID numbers are as follows:

Canisters ID Number	Canister Type	Analysis	Location	Canisters Deployed	Canisters Retrieved
Tesla Dealership					
2701243	Charcoal Canister	Radon Testing	1st FL=Svc. Lockers	9/08/2019	9/11/2019
2701245		Radon Testing	2nd FL=Sales/Delivery	9/08/2019	9/11/2019
2701249		Radon Testing	2nd FL=NE Office	9/08/2019	9/11/2019
2701264		Radon Testing	1st FL=Svc. Garage SE	9/08/2019	9/11/2019
2701273		Radon Testing	2nd FL=Sales/Delivery	9/08/2019	9/11/2019

Canisters ID Number	Canister Type	Analysis	Location	Canisters Deployed	Canisters Retrieved
Tesla Dealership - Concluded					
2701281*	Charcoal Canister	Radon Testing	2nd FL=Parts/BLANK	9/08/2019	9/11/2019
2701284		Radon Testing	1st FL=Svc. Garage NW	9/08/2019	9/11/2019
2701287		Radon Testing	2nd FL=NW Office	9/08/2019	9/11/2019
2701290		Radon Testing	1st FL=Svc. Lounge	9/08/2019	9/11/2019
2701297 [1]		Radon Testing	2nd FL=Sales Lnge DP	9/08/2019	9/11/2019
2701298		Radon Testing	1st FL=Svc. Waiting Rm	9/08/2019	9/11/2019
2701311		Radon Testing	1st FL=Svc. Office	9/08/2019	9/11/2019
2701698		Radon Testing	2nd FL=Parts/Store Rm	9/08/2019	9/11/2019
2701699		Radon Testing	1st FL=Show Rm BL	9/08/2019	9/11/2019
2701715 [2]		Radon Testing	2nd FL=NE Off.DP	9/08/2019	9/11/2019
2701719		Radon Testing	2nd FL=Sales Lounge	9/08/2019	9/11/2019
2701743		Radon Testing	1st FL=Svc. Garage NE	9/08/2019	9/11/2019

[1] A co-located sample of Canister # 2701719
[2] A co-located sample of Canister # 2701249
* Unexposed field blank

A.2.3.3 Technical Review:

All samples were reviewed for the following quality control (QC) parameters. All QC results were evaluated, but only non-compliant QC observations, if any, are discussed in detail in this report.

- Field Duplicate
- Field Blank

Field Duplicate:

Canister Number	Sample Result (D1)	Field Duplicate sample Number	Field duplicate Result (D2)	Average (M)	RPD
2701719	0.2 pCi/L	2701297	0.2 pCi/L	0.0 pCi/L	0.0 %
2701249	0.2 pCi/L	2701715	0.3 pCi/L	0.6 pCi/L	40.0 %

According to the Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings, duplicate samples were deployed at a rate of one per unit of the measurement location. Duplicate co-located pairs of measurements greater than or equal to 4.0 pCi/L should

produce a Relative Percent Difference (RPD) greater than 36% no more than 1% of the time. In the field duplicate pairs of 2701719 and 2701297; and 2701249 and 2701715, the sample and duplicate measurements are less than the 4.0 pCi/L. Therefore, no action was required.

RPD = [(D1-D2)/(D1 + D2/2)] X 100%

Field Blank

Canister ID	Location	Blank Concentration	QC Limit
2701281 (Unexposed Field Blank)	2nd FL=Parts/BLANK	0.1 pCi/L	<4.0 pCi/L

Field blank measurements are well below 4.0 pCi/L so no qualification was required.

All of the 17 air samples were reported below 4.0 pCi/L. The national average indoor radon gas level is approximately 1.3 pCi/L.

Contract Problems/Non-Compliance:

None.

Reviewer's Signature: Smita Sumbaly **Date:** 10/4/2019

Verified By: **Date:** 10/4/2019

Analytical Data Summary Table - Radon Testing
Canadian Uranium and Radium Site, Mount Kisco, New York
Sampling Dates: September 8 through 11, 2019

Canisters ID Number	Canister Type	Analysis	Location	Radon Level
2701243	Charcoal Canister	Radon Testing	1st FL=Svc. Lockers	0.4 pCi/L
2701245	Charcoal Canister	Radon Testing	2nd FL=Sales/Delivery	0.2 pCi/L
2701249	Charcoal Canister	Radon Testing	2nd FL=NE Office	0.2 pCi/L
2701264	Charcoal Canister	Radon Testing	1st FL=Svc. Garage SE	0.2 pCi/L
2701273	Charcoal Canister	Radon Testing	2nd FL=Sales/Delivery	0.3 pCi/L
2701281*	Charcoal Canister	Radon Testing	2nd Floor=Parts/BLANK	0.1 pCi/L
2701284	Charcoal Canister	Radon Testing	1st FL=Svc. Garage NW	0.3 pCi/L
2701287	Charcoal Canister	Radon Testing	2nd FL=NW Office	0.2 pCi/L
2701290	Charcoal Canister	Radon Testing	1st FL=Svc. Lounge	0.5 pCi/L
2701297 [1]	Charcoal Canister	Radon Testing	2nd FL=Sales Lnge DP	0.2 pCi/L
2701298	Charcoal Canister	Radon Testing	1st FL=Svc. Waiting Rm	0.6 pCi/L
2701311	Charcoal Canister	Radon Testing	1st FL=Svc. Office	0.5 pCi/L
2701698	Charcoal Canister	Radon Testing	2nd FL=Parts/Store Rm	0.2 pCi/L
2701699	Charcoal Canister	Radon Testing	1st FL=Show Rm BL	0.8 pCi/L
2701715 [2]	Charcoal Canister	Radon Testing	2nd FL=NE Off.DP	0.3 pCi/L
2701719	Charcoal Canister	Radon Testing	2nd FL=Sales Lounge	0.2 pCi/L
2701743	Charcoal Canister	Radon Testing	1st FL=Svc. Garage NE	0.2 pCi/L

[1]A co-located sample of Canister# 2701719
[2]A co-located sample of Canister# 2701249
*Unexposed Field Blank

pCi/L - Picocuries per liter of air

FL - Floor
Svc. - Service
Rm - Room
Lnge - Lounge
DP = Duplicate

NE- North East
SW - South West
SE - South East
NW - North West

RTCA RADON TESTING CORPORATION OF AMERICA

PC1909110068

Site Radon Inspection Report

Date : 09/11/2019

Ms. Kam Wong
PRECISION ENVIRONMENTAL
36-15 A 23rd Street
Long Island City, NY 11106-

Client: Tesla Dealership
Test Location: 125 Kisco Avenue
Mount Kisco, NY 10549-

Individual Canister Results

Canister ID# :	2701243	Test Start :	09/08/2019 @ 11:46
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:49
Location :	1st FL=Svc. Lockers	Received:	09/11/2019 @ 13:24
Radon Level :	0.4 pCi/L	Analyzed:	09/11/2019 @ 15:39
Error for Measurement is: ±	0.2 pCi/L		

Canister ID# :	2701245	Test Start :	09/08/2019 @ 11:14
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:43
Location :	2nd FL=Sales/Delivery	Received:	09/11/2019 @ 13:24
Radon Level :	0.2 pCi/L	Analyzed:	09/11/2019 @ 15:44
Error for Measurement is: ±	0.1 pCi/L		

Canister ID# :	2701249	Test Start :	09/08/2019 @ 11:23
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:46
Location :	2nd FL=NE Office	Received:	09/11/2019 @ 13:24
Radon Level :	0.2 pCi/L	Analyzed:	09/11/2019 @ 15:39
Error for Measurement is: ±	0.2 pCi/L		

Canister ID# :	2701264	Test Start :	09/08/2019 @ 11:51
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:52
Location :	1st FL=Svc. Garage SE	Received:	09/11/2019 @ 13:24
Radon Level :	0.2 pCi/L	Analyzed:	09/11/2019 @ 15:44
Error for Measurement is: ±	0.1 pCi/L		

Canister ID# :	2701273	Test Start :	09/08/2019 @ 11:10
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:41
Location :	2nd FL=Sales/Delivery	Received:	09/11/2019 @ 13:24
Radon Level :	0.3 pCi/L	Analyzed:	09/11/2019 @ 15:44
Error for Measurement is: ±	0.2 pCi/L		

Canister ID# :	2701281	Test Start :	09/08/2019 @ 11:05
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:39
Location :	2nd FL=Parts/BLANK	Received:	09/11/2019 @ 13:24
Radon Level :	0.1 pCi/L	Analyzed:	09/11/2019 @ 15:44
Error for Measurement is: ±	0.2 pCi/L		

National Radon Safety Board NRSB Certified Radon Professionals

Andreas C. George

Andreas C. George
Radon Measurement Specialist
NJ MES 11089

Dante Galan
Laboratory Director

NRSB ARL0001
NYS ELAP ID: 10806
PADEP ID: 0346
NJDEP ID: NY933
NJ MEB 90036
FL DOH RB1609
IL RNL2000201

(914)345-3380
FAX (914)345-8546

2 Hayes Street, Elmsford, NY 10523
www.rtca.com

RTCA RADON TESTING CORPORATION OF AMERICA

PC1909110068

Site Radon Inspection Report

Date : 09/11/2019

Ms. Kam Wong
PRECISION ENVIRONMENTAL
36-15 A 23rd Street
Long Island City, NY 11106-

Client: Tesla Dealership
Test Location: 125 Kisco Avenue
Mount Kisco, NY 10549-

Individual Canister Results

Canister ID# :	2701284	Test Start :	09/08/2019 @ 11:42
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:51
Location :	1st FL=Svc. Garage NW	Received:	09/11/2019 @ 13:24
Radon Level :	0.3 pCi/L	Analyzed:	09/11/2019 @ 15:39
Error for Measurement is: ±	0.1 pCi/L		

Canister ID# :	2701287	Test Start :	09/08/2019 @ 11:17
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:44
Location :	2nd FL=NW Office	Received:	09/11/2019 @ 13:24
Radon Level :	0.2 pCi/L	Analyzed:	09/11/2019 @ 15:39
Error for Measurement is: ±	0.1 pCi/L		

Canister ID# :	2701290	Test Start :	09/08/2019 @ 10:50
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:37
Location :	1st FL=Svc. Lounge	Received:	09/11/2019 @ 13:24
Radon Level :	0.5 pCi/L	Analyzed:	09/11/2019 @ 15:58
Error for Measurement is: ±	0.2 pCi/L		

Canister ID# :	2701297	Test Start :	09/08/2019 @ 11:00
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:38
Location :	2nd FL=Sales Lnge DP	Received:	09/11/2019 @ 13:24
Radon Level :	0.2 pCi/L	Analyzed:	09/11/2019 @ 15:39
Error for Measurement is: ±	0.2 pCi/L		

Canister ID# :	2701298	Test Start :	09/08/2019 @ 10:57
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:36
Location :	1st FL=Svc. Waiting Rm	Received:	09/11/2019 @ 13:24
Radon Level :	0.6 pCi/L	Analyzed:	09/11/2019 @ 15:44
Error for Measurement is: ±	0.1 pCi/L		

Canister ID# :	2701311	Test Start :	09/08/2019 @ 10:45
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:34
Location :	1st FL=Svc. Off.	Received:	09/11/2019 @ 13:24
Radon Level :	0.5 pCi/L	Analyzed:	09/11/2019 @ 15:39
Error for Measurement is: ±	0.1 pCi/L		

National Radon Safety Board NRSB Certified Radon Professionals

Andreas C. George

Andreas C. George
Radon Measurement Specialist
NJ MES 11089

Dante Galan
Laboratory Director

NRSB ARL0001
NYS ELAP ID: 10806
PADEP ID: 0346
NJDEP ID: NY933
NJ MEB 90036
FL DOH RB1609
IL RNL2000201

(914)345-3380
FAX (914)345-8546

2 Hayes Street, Elmsford, NY 10523
www.rtca.com

RTCA RADON TESTING CORPORATION OF AMERICA

PC1909110068

Site Radon Inspection Report

Date : 09/11/2019

Ms. Kam Wong
PRECISION ENVIRONMENTAL
36-15 A 23rd Street
Long Island City, NY 11106-

Client: Tesla Dealership
Test Location: 125 Kisco Avenue
Mount Kisco, NY 10549-

Individual Canister Results

Canister ID# :	2701698	Test Start :	09/08/2019 @ 11:05
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:39
Location :	2nd FL=Parts/Store Rm	Received:	09/11/2019 @ 13:24
Radon Level :	0.2 pCi/L	Analyzed:	09/11/2019 @ 15:44
Error for Measurement is: ±	0.1 pCi/L		

Canister ID# :	2701699	Test Start :	09/08/2019 @ 11:32
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:33
Location :	1st FL=Show Rm BL	Received:	09/11/2019 @ 13:24
Radon Level :	0.8 pCi/L	Analyzed:	09/11/2019 @ 15:44
Error for Measurement is: ±	0.2 pCi/L		

Canister ID# :	2701715	Test Start :	09/08/2019 @ 11:23
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:46
Location :	2nd FL=NE Off. DP	Received:	09/11/2019 @ 13:24
Radon Level :	0.3 pCi/L	Analyzed:	09/11/2019 @ 15:39
Error for Measurement is: ±	0.2 pCi/L		

Canister ID# :	2701719	Test Start :	09/08/2019 @ 11:00
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:38
Location :	2nd FL=Sales Lounge	Received:	09/11/2019 @ 13:24
Radon Level :	0.2 pCi/L	Analyzed:	09/11/2019 @ 15:39
Error for Measurement is: ±	0.2 pCi/L		

Canister ID# :	2701743	Test Start :	09/08/2019 @ 11:38
Canister Type :	Charcoal Canister 3 inch	Test Stop :	09/11/2019 @ 12:47
Location :	1st FL=Svc. Garage NE	Received:	09/11/2019 @ 13:24
Radon Level :	0.2 pCi/L	Analyzed:	09/11/2019 @ 15:44
Error for Measurement is: ±	0.1 pCi/L		

National Radon Safety Board NRSB Certified Radon Professionals

Andreas C. George

Andreas C. George
Radon Measurement Specialist
NJ MES 11089

Dante Galan
Laboratory Director

NRSB ARL0001
NYS ELAP ID: 10806
PADEP ID: 0346
NJDEP ID: NY933
NJ MEB 90036
FL DOH RB1609
IL RNL2000201

(914)345-3380
FAX (914)345-8546

2 Hayes Street, Elmsford, NY 10523
www.rtca.com

RTCA RADON TESTING CORPORATION OF AMERICA

PC1909110068

Site Radon Inspection Report

Date : 09/11/2019

Ms. Kam Wong
PRECISION ENVIRONMENTAL
36-15 A 23rd Street
Long Island City, NY 11106-

Client: Tesla Dealership
Test Location: 125 Kisco Avenue
Mount Kisco, NY 10549-
Individual Canister Results

The reported results indicate that radon levels in the building tested are below the United States Environmental Protection Agency (EPA) action level of 4.0 picoCuries per liter of air (pCi/L). The EPA recommends retesting if your living patterns change and you begin occupying a lower level of the building, such as a basement or if major remodeling is done.

General radon information may be obtained by consulting the EPA booklet: A Citizen's Guide to Radon (www.epa.gov/radon/pubs/citguide.html). To request a copy or for further information, please contact your state health department. The EPA maintains a radon information website, including copies of its publications, at www.epa.gov/iaq/radon.

For New Jersey clients: Please see the attached guidance document entitled Radon Testing and Mitigation: The Basics for further information.

For New York clients: If the radon level of one or more testing devices is equal to or exceeds 20 pCi/L please contact the New York State Department of Health, Bureau of Environmental Radiation Protection, for technical advice and assistance at 518-402-7556 or toll free 1-800-458-1158.

PLEDGE OF ASSURED QUALITY

All procedures used for generating this report are in complete accordance with the current EPA protocols for the analysis of radon in air (EPA 402-R-92-004). The analytical results relate only to the samples tested, in the condition received by the lab, and that calculations were based upon the information supplied by client. RTCA and its personnel do not assume responsibility or liability, collectively and individually, for analysis results when detectors have been improperly handled or placed by the consumer, nor does RTCA and its personnel accept responsibility for any financial or health consequences of subsequent action or lack of action, taken by the customer or it's consultants based on RTCA-provided results.

National Radon Safety Board NRSB Certified Radon Professionals

Andreas C. George
Radon Measurement Specialist
NJ MES 11089

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www.rtca.com

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued April 01, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DANTE GALAN
RTCA-RADON TESTING CORPORATION OF AMERICA, INC
2 HAYES STREET
ELMSFORD, NY 10523

NY Lab Id No: 10806

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES AIR AND EMISSIONS
All approved analytes are listed below:

Miscellaneous

Radon	Charcoal - Liquid Scintillation
	Electret
	Charcoal canister

Serial No.: 59430

National Radon Proficiency Program

Andreas C. Andreou

Residential Measurement Provider

ID Number: 102798 RT Expiration 11/30/2019

To confirm validity of this certification call (800) 269-4174. Verification of adherence to state and local regulations is advised. See reverse for specific certification designations.

Andreas C. Andreou 102798 RT

This individual is certified for the use of passive measurement devices to be analyzed by NRPP certified Analytical Laboratories and also certified to provide Analytical Services using the following device(s):

The radon office for the state in which this person resides may be contacted for information on radon and local requirements. For additional information contact NRPP at (800) 269-4174, or visit the NRPP web-site at nrpp.info

State Radon Program Contact Number: (518) 402-8789

Canister Barcode Label /	Building Name	Floor	Room Name	Placement Location	Start Date	Start Time	Stop Date	Stop Time	Comments	Tech. Place	Tech. Pick-up	Lab Results (pCi/L)
2701311	Tesla Dealership	1st	Service office	On top of a cabinet 12"N/65"W	9/8/2019	10:45	9/11/2019	12:34		AA	AA	0.5
2701290	Tesla Dealership	1st	Service lounge area	On top of refrigerator 23"N/120"W	9/8/2019	10:50	9/11/2019	12:37		AA	AA	0.5
2701298	Tesla Dealership	1st	Service waiting area	On top of a desk 178"S/69"E	9/8/2019	10:57	9/11/2019	12:36		AA	AA	0.6
2701719	Tesla Dealership	2nd	Sales lounge area	On top of refrigerator 13"N/83"W	9/8/2019	11:00	9/11/2019	12:38		AA	AA	0.2
2701297	Tesla Dealership	2nd	Sales lounge area	On top of refrigerator 13"N/88"W	9/8/2019	11:00	9/11/2019	12:38	**Co-located (Duplicate)**	AA	AA	0.2
2701698	Tesla Dealership	2nd	Parts Dept. storage room	On top of a shelf 85"N/12"W	9/8/2019	11:05	9/11/2019	12:39		AA	AA	0.2
2701281	Tesla Dealership	2nd	Parts Dept. storage room	On top of a shelf 81"N/12"W	9/8/2019	11:05	9/11/2019	12:39	**Unexposed filed blank**	AA	AA	0.1
2701273	Tesla Dealership	2nd	Sales & delivery department	On top of a desk 91"S/89"W	9/8/2019	11:10	9/11/2019	12:41		AA	AA	0.3
2701245	Tesla Dealership	2nd	Sales & delivery department	On top of a cabinet 16"N/29"E	9/8/2019	11:14	9/11/2019	12:43		AA	AA	0.2
2701287	Tesla Dealership	2nd	Northwest corner office	On top of a desk 69"N/12"E	9/8/2019	11:17	9/11/2019	12:44		AA	AA	0.2
2701249	Tesla Dealership	2nd	Northeast corner office	On top of a desk 12"S/12"E	9/8/2019	11:23	9/11/2019	12:46		AA	AA	0.2

Canister Barcode Label /	Building Name	Floor	Room Name	Placement Location	Start Date	Start Time	Stop Date	Stop Time	Comments	Tech. Place	Tech. Pick-up	Lab Results (pCi/L)
2701715	Tesla Dealership	2nd	Northeast corner office	On top of a desk 12"S/17"E	9/8/2019	11:23	9/11/2019	12:46	**Co-located (Duplicate)**	AA	AA	0.3
2701699	Tesla Dealership	1st	Showroom	On top of a PEI stand 265"N/12"E	9/8/2019	11:32	9/11/2019	12:33		AA	AA	0.8
2701743	Tesla Dealership	1st	Service garage – Northeast corner	On top of air compressor 50"N/37"E	9/8/2019	11:38	9/11/2019	12:47		AA	AA	0.2
2701284	Tesla Dealership	1st	Service garage – Northwest side area	On top of a tool cabinet 102"S/370"W	9/8/2019	11:42	9/11/2019	12:51		AA	AA	0.3
2701243	Tesla Dealership	1st	Service garage locker room	On top of a refrigerator 30"N/19"W	9/8/2019	11:46	9/11/2019	12:49		AA	AA	0.4
2701264	Tesla Dealership	1st	Service garage – Southeast corner	On top of a desk 36"S/37"E	9/8/2019	11:51	9/11/2019	12:52		AA	AA	0.2

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Weston Solutions, Inc.
1090 King Georges Post Road, Suite 201
Edison, NJ 08837
ATTN: Ms. Smita Sumbaly
S.Sumbaly@WestonSolutions.com

March 4, 2020

SUBJECT: CRU Site, Data Validation

Dear Ms. Sumbaly,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on January 22, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #47161:

SDG #	Fraction
1900152, 1900153	Gamma Spectroscopy, Isotopic Uranium, Isotopic Thorium,

The data validation was performed under Level IV guidelines. The analyses were validated using the following documents as applicable to each method:

- Multi Agency Radiological Laboratory Analytical Protocols Manual; July 2004
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review; January 2017

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

Level IV

LDC #47161 (Weston Solutions, Inc.-Edison, NJ / CRU Site, NY)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Gamma Spec. (NAREL)		U (NAREL)		Th (NAREL)																											
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	1900152	01/22/20	02/12/20	0	19	0	19	0	19																										
B	1900153	01/22/20	02/12/20	2	0	2	0	2	0																										
Total	J/PG			2	19	2	19	2	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	63

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: CRU Site, NY

LDC Report Date: March 4, 2020

Parameters: Gamma Spectroscopy

Validation Level: Level IV

Laboratory: National Analytical Radiation Environmental Laboratory

Sample Delivery Group (SDG): 1900152

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
C008-SB001-036048-01	B9. 10537D	Soil	09/08/19
C008-SB001-036048-02	B9. 10538E	Soil	09/08/19
C008-SB001-108120-01	B9. 10539F	Soil	09/08/19
C008-SB002-024036-01	B9. 10540Y	Soil	09/08/19
C008-SB002-060072-01	B9. 10541Z	Soil	09/08/19
C008-SB003-000012-01	B9. 10542A	Soil	09/08/19
C008-SB003-072084-01	B9. 10543B	Soil	09/08/19
C008-SB004-012024-01	B9. 10544C	Soil	09/08/19
C008-SB004-084096-01	B9. 10545D	Soil	09/08/19
C008-SB005-036048-01	B9. 10546E	Soil	09/08/19
C008-SB005-060072-01	B9. 10547F	Soil	09/08/19
C008-SB006-024036-01	B9. 10548G	Soil	09/08/19
C008-SB006-060072-01	B9. 10549H	Soil	09/08/19
C008-SB007-024036-01	B9. 10550A	Soil	09/09/19
C008-SB007-060072-01	B9. 10551B	Soil	09/09/19
C008-SB008-048060-01	B9. 10552C	Soil	09/09/19
C008-SB008-084096-01	B9. 10553D	Soil	09/09/19
C008-SB009-000012-01	B9. 10554E	Soil	09/09/19
C008-SB009-072084-01	B9. 10555F	Soil	09/09/19
C008-SB001-036048-01DUP	B9. 10537DDUP	Soil	09/08/19

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Multi Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual (July 2004) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Gamma Spectroscopy by Method NAREL GAM-01-RA

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

Counting and detector efficiency were determined for each detector and each radionuclide.

III. Continuing Calibration

Continuing calibration and background determination were performed at the required frequencies. Results were within laboratory control limits.

IV. Blanks

Laboratory blanks were analyzed as required by the method. Blank results contained less than the minimum detectable concentrations (MDC).

V. Field Blanks

Samples RB-190908 and RB-190909 (both from SDG 1900153) were identified as rinsate blanks. No contaminants were found.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicates (MSD) analyses were not required by the method.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

Samples C008-SB001-036048-01 and C008-SB001-036048-02 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Isotope	Activity (pCi/g)		RPD
	C008-SB001-036048-01	C008-SB001-036048-02	
Bismuth-212	0.841	0.846	1
Bismuth-214	1.66	2.009	19
Cesium-137	0.0182	0.0208	13
Potassium-40	17.1	17.2	1
Lead-210	1.91	2.00	5
Lead-212	0.953	0.719	28
Lead-214	1.94	2.40	21
Radium-226	2.44	3.03	22
Radium-228	0.638	0.787	21
Thorium-234	0.491	0.532	8
Thallium-208	0.222	0.270	20

X. Minimum Detectable Concentrations

All minimum detectable concentrations (MDC) met reporting limits (RL).

XI. Sample Result Verification

All sample result verifications were acceptable.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

CRU Site, NY
Gamma Spectroscopy - Data Qualification Summary - SDG 1900152

No Sample Data Qualified in this SDG

CRU Site, NY
Gamma Spectroscopy - Laboratory Blank Data Qualification Summary - SDG 1900152

No Sample Data Qualified in this SDG

CRU Site, NY
Gamma Spectroscopy - Field Blank Data Qualification Summary - SDG 1900152

No Sample Data Qualified in this SDG

LDC #: 47161A35 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/3/20
SDG #: 1900152 Level IV Page: 1 of 2
Laboratory: National Analytical Radiation Environmental Laboratory Reviewer: a
2nd Reviewer: a

METHOD: Gamma Spectroscopy (NAREL GAM -01-RA)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	RB= RB-190908, RB-190109
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not required (1900153)
VII.	Duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	SW	(1,2)
X.	Minimum detectable activity (MDA)	A	
XI.	Sample result verification	A	
XII	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	C008-SB001-036048-01	B9. 10537D	Soil	09/08/19
2	C008-SB001-036048-02	B9. 10538E	Soil	09/08/19
3	C008-SB001-108120-01	B9. 10539F	Soil	09/08/19
4	C008-SB002-024036-01	B9. 10540Y	Soil	09/08/19
5	C008-SB002-060072-01	B9. 10541Z	Soil	09/08/19
6	C008-SB003-000012-01	B9. 10542A	Soil	09/08/19
7	C008-SB003-072084-01	B9. 10543B	Soil	09/08/19
8	C008-SB004-012024-01	B9. 10544C	Soil	09/08/19
9	C008-SB004-084096-01	B9. 10545D	Soil	09/08/19
10	C008-SB005-036048-01	B9. 10546E	Soil	09/08/19
11	C008-SB005-060072-01	B9. 10547F	Soil	09/08/19
12	C008-SB006-024036-01	B9. 10548G	Soil	09/08/19
13	C008-SB006-060072-01	B9. 10549H	Soil	09/08/19
14	C008-SB007-024036-01	B9. 10550A	Soil	09/09/19
15	C008-SB007-060072-01	B9. 10551B	Soil	09/09/19
16	C008-SB008-048060-01	B9. 10552C	Soil	09/09/19
17	C008-SB008-084096-01	B9. 10553D	Soil	09/09/19

LDC #: 47161A35 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/3/20
SDG #: 1900152 Level IV Page: 2 of 2
Laboratory: National Analytical Radiation Environmental Laboratory Reviewer:
2nd Reviewer:

METHOD: Gamma Spectroscopy (NAREL GAM -01-RA)

18	C008-SB009-000012-01	B9. 10554E	Soil	09/09/19
19	C008-SB009-072084-01	B9. 10555F	Soil	09/09/19
20	C008-SB001-036048-01DUP	B9. 10537DDUP	Soil	09/08/19
21				
22				
23				

Notes:

LDC #: 47161A85

VALIDATION FINDINGS CHECKLIST

Reviewer: CM
2nd Reviewer: [illegible]

Method: Radiochemistry (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
II. Calibration				
Were all instruments and detectors calibration as required?	✓			
Were NIST traceable standards used for all calibrations?	✓			
Was the check source identified by activity and radionuclide?	✓			
Were check sources including background counts analyzed at the requiried frequency and within laboratory control limits?	✓			
III. Blanks				
Were blank analyses performed as required?	✓			
Were any activities detected in the blanks greater than the minimum detectable activity (MDA)? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spikes and Duplicates				
Were a matrix spike (MS) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.			✓	
Were the MS percent recoveries (%R) within the QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Was a duplicate sample anaylzed at the required frequency of 5% in this SDG?	✓			
Were all duplicate sample duplicate error rations (DER) ≤1.42?.	✓			
V. Laboratory control samples				
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 75-125%	✓			
VI. Sample Chemical/Carrier Recovery				
Was a tracer/carrier added to each sample?			✓	
Were tracer/carrier recoveries within the QC limits?			✓	
VII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓	✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
VIII. Sample Result Verification				
Were activities adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were the Minimum Detectable Activities (MDA) < RL?	✓			

Validation Area	Yes	No	NA	Findings/Comments
IX. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
X. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
XI. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC# 47161A35

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

Radiochemistry, Method see cover

Isotope	Activity (pCi/g)		RPD
	1	2	
Bi-212	0.841	0.846	1
Bi-214	1.66	2.009	19
Cs-137	0.0182	0.0208	13
K-40	17.1	17.2	1
Pb-210	1.91	2.00	5
Pb-212	0.953	0.719	28
Pb-214	1.94	2.40	21
Ra-226	2.44	3.03	22
Ra-228	0.638	0.787	21
Th-234	0.491	0.532	8
Tl-208	0.222	0.270	20

LDC #: 47161A35

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: QB
2nd Reviewer: [illegible]

METHOD: Radiochemistry (Method: see cover)

Percent recoveries (%R) for a laboratory control sample, a matrix spike and a matrix spike duplicate sample were recaluculated using the following formula:

%R = Found / True x 100 Where, Found = activity of each analyte measured in the analysis of the sample.
True = activity of each analyte in the source.

A matrix spike and matrix spike duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample activity
D = Duplicate sample activity

Sample ID	Type of Analysis	Analyte	Found/S (units)	True/D (units)	Recalculated %R or RPD	Reported %R or RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Am-241	4340	4140	104.8	104.8	Y
	Matrix spike sample						
DO	Duplicate RPD	Ra-226	2.44	2.44	0	0.3	Y
	Chemical recovery						

Comments: _____

LDC #: 47161A35

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: C
2nd reviewer: [signature]

METHOD: Radiochemistry (Method: See cover)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?

Analyte results for K-40 reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$$\frac{(cpm - background)}{2.22 \times E \times SA \times Vol}$$

E = Counter Efficiency
SA = Self-absorbance factor
Vol = Volume of sample

Recalculation:

3: K-40 = 11.23 pCi/g (directly from raw data)

#	Sample ID	Analyte	Reported Concentration (pCi/g)	Calculated Concentration (pCi/g)	Acceptable (Y/N)
	1	Bi-212	0.841	0.841	Y
	DUP 2	Bi-214	1.67	1.67	
	2 3	Cs-137	0.0208	0.0208	
	3 4	K-40	11.2	11.2	
	4 5	Pb-210	4.52	4.52	
	5 6	Pb-212	0.746	0.746	
	6 7	Pb-214	1.07	1.07	
	7 8	Ra-226	3.51	3.51	
	8 9	Ra-228	0.727	0.727	
	9 10	Th-228 234	5.45	5.45	
	10 11	Tl-208	0.280	0.280	
	11 12	U-235	0.0773	0.0773	
	12 13	Bi-212	0.840	0.840	
	13 14	Bi-214	1.20	1.20	
	14 15	K-40	5.01	5.01	
	15 16	Pb-210	3.53	3.53	
	16 17	Pb-212	0.771	0.771	
	17 18	Pb-214	2.55	2.55	
	18 19	Ra-226	1.93	1.93	
	19	Ra-228	0.692	0.692	

Note:

LDC Report# 47161A59

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: CRU Site, NY

LDC Report Date: March 4, 2020

Parameters: Isotopic Uranium

Validation Level: Level IV

Laboratory: National Analytical Radiation Environmental Laboratory

Sample Delivery Group (SDG): 1900152

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
C008-SB001-036048-01	B9. 10537D	Soil	09/08/19
C008-SB001-036048-02	B9. 10538E	Soil	09/08/19
C008-SB001-108120-01	B9. 10539F	Soil	09/08/19
C008-SB002-024036-01	B9. 10540Y	Soil	09/08/19
C008-SB002-060072-01	B9. 10541Z	Soil	09/08/19
C008-SB003-000012-01	B9. 10542A	Soil	09/08/19
C008-SB003-072084-01	B9. 10543B	Soil	09/08/19
C008-SB004-012024-01	B9. 10544C	Soil	09/08/19
C008-SB004-084096-01	B9. 10545D	Soil	09/08/19
C008-SB005-036048-01	B9. 10546E	Soil	09/08/19
C008-SB005-060072-01	B9. 10547F	Soil	09/08/19
C008-SB006-024036-01	B9. 10548G	Soil	09/08/19
C008-SB006-060072-01	B9. 10549H	Soil	09/08/19
C008-SB007-024036-01	B9. 10550A	Soil	09/09/19
C008-SB007-060072-01	B9. 10551B	Soil	09/09/19
C008-SB008-048060-01	B9. 10552C	Soil	09/09/19
C008-SB008-084096-01	B9. 10553D	Soil	09/09/19
C008-SB009-000012-01	B9. 10554E	Soil	09/09/19
C008-SB009-072084-01	B9. 10555F	Soil	09/09/19
C008-SB001-036048-01DUP	B9. 10537DDUP	Soil	09/08/19
C008-SB005-036048-01DUP	B9. 10546EDUP	Soil	09/08/19

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Multi Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual (July 2004) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Isotopic Uranium by Method NAREL ACT-02F-U

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

Counting and detector efficiency were determined for each detector and each radionuclide.

III. Continuing Calibration

Continuing calibration and background determination were performed at the required frequencies. Results were within laboratory control limits.

IV. Blanks

Laboratory blanks were analyzed as required by the method. Blank results contained less than the minimum detectable concentrations (MDC).

V. Field Blanks

Samples RB-190908 and RB-190909 (both from SDG 1900153) were identified as rinsate blanks. No contaminants were found with the following exceptions:

Blank ID	Sampling Date	Isotope	Activity	Associated Samples
RB-190908	09/08/19	Uranium-234	0.136 pCi/L	C008-SB001-036048-01 C008-SB001-036048-02 C008-SB001-108120-01 C008-SB002-024036-01 C008-SB002-060072-01 C008-SB003-000012-01 C008-SB003-072084-01 C008-SB004-012024-01 C008-SB004-084096-01 C008-SB005-036048-01 C008-SB005-060072-01 C008-SB006-024036-01 C008-SB006-060072-01

Sample activities were compared to activities detected in the field blanks. The sample activities were either not detected or were significantly greater (>5X blank activity) than the activities found in the associated field blanks with the following exceptions:

Sample	Isotope	Reported Activity	Modified Final Activity
C008-SB001-036048-01	Uranium-234	0.444 pCi/L	0.444U pCi/L
C008-SB001-036048-02	Uranium-234	0.420 pCi/L	0.420U pCi/L
C008-SB001-108120-01	Uranium-234	0.815 pCi/L	0.815U pCi/L
C008-SB002-024036-01	Uranium-234	0.688 pCi/L	0.688U pCi/L
C008-SB002-060072-01	Uranium-234	0.527 pCi/L	0.527U pCi/L
C008-SB003-000012-01	Uranium-234	0.407 pCi/L	0.407U pCi/L
C008-SB003-072084-01	Uranium-234	1.75 pCi/L	1.75U pCi/L
C008-SB004-012024-01	Uranium-234	0.506 pCi/L	0.506U pCi/L
C008-SB004-084096-01	Uranium-234	1.91 pCi/L	1.91U pCi/L
C008-SB005-036048-01	Uranium-234	0.725 pCi/L	0.725U pCi/L
C008-SB005-060072-01	Uranium-234	0.921 pCi/L	0.921U pCi/L
C008-SB006-024036-01	Uranium-234	0.377 pCi/L	0.377U pCi/L
C008-SB006-060072-01	Uranium-234	1.10 pCi/L	1.10U pCi/L

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicates (MSD) analyses were not required by the method.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

Samples C008-SB001-036048-01 and C008-SB001-036048-02 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Isotope	Activity (pCi/g)		RPD
	C008-SB001-036048-01	C008-SB001-036048-02	
Uranium-234	0.444	0.420	6
Uranium-235	0.0287	0.0357	22
Uranium-238	0.556	0.355	44

X. Minimum Detectable Concentrations

All minimum detectable concentrations (MDC) met reporting limits (RL).

XI. Sample Result Verification

All sample result verifications were acceptable.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to rinsate blank contamination, data were qualified as not detected in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

CRU Site, NY
Isotopic Uranium - Data Qualification Summary - SDG 1900152

No Sample Data Qualified in this SDG

CRU Site, NY
Isotopic Uranium - Laboratory Blank Data Qualification Summary - SDG 1900152

No Sample Data Qualified in this SDG

CRU Site, NY
Isotopic Uranium - Field Blank Data Qualification Summary - SDG 1900152

Sample	Isotope	Modified Final Activity	A or P
C008-SB001-036048-01	Uranium-234	0.444U pCi/L	A
C008-SB001-036048-02	Uranium-234	0.420U pCi/L	A
C008-SB001-108120-01	Uranium-234	0.815U pCi/L	A
C008-SB002-024036-01	Uranium-234	0.688U pCi/L	A
C008-SB002-060072-01	Uranium-234	0.527U pCi/L	A
C008-SB003-000012-01	Uranium-234	0.407U pCi/L	A
C008-SB003-072084-01	Uranium-234	1.75U pCi/L	A
C008-SB004-012024-01	Uranium-234	0.506U pCi/L	A
C008-SB004-084096-01	Uranium-234	1.91U pCi/L	A
C008-SB005-036048-01	Uranium-234	0.725U pCi/L	A
C008-SB005-060072-01	Uranium-234	0.921U pCi/L	A
C008-SB006-024036-01	Uranium-234	0.377U pCi/L	A
C008-SB006-060072-01	Uranium-234	1.10U pCi/L	A

LDC #: 47161A59 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/3/20
SDG #: 1900152 Level IV Page: 1 of 2
Laboratory: National Analytical Radiation Environmental Laboratory Reviewer:
2nd Reviewer:

METHOD: Isotopic Uranium (NAREL ACT-02F-U)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	SW	RB= RB-190908, RB-190909
VI.	Matrix Spike/Matrix Spike Duplicates	N	not required (190153)
VII.	Duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	SW	(1,2)
X.	Tracer Recovery	A	
XI.	Minimum detectable activity (MDA)	A	
XII.	Sample result verification	A	
XIII	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	C008-SB001-036048-01	B9. 10537D	Soil	09/08/19
2	C008-SB001-036048-02	B9. 10538E	Soil	09/08/19
3	C008-SB001-108120-01	B9. 10539F	Soil	09/08/19
4	C008-SB002-024036-01	B9. 10540Y	Soil	09/08/19
5	C008-SB002-060072-01	B9. 10541Z	Soil	09/08/19
6	C008-SB003-000012-01	B9. 10542A	Soil	09/08/19
7	C008-SB003-072084-01	B9. 10543B	Soil	09/08/19
8	C008-SB004-012024-01	B9. 10544C	Soil	09/08/19
9	C008-SB004-084096-01	B9. 10545D	Soil	09/08/19
10	C008-SB005-036048-01	B9. 10546E	Soil	09/08/19
11	C008-SB005-060072-01	B9. 10547F	Soil	09/08/19
12	C008-SB006-024036-01	B9. 10548G	Soil	09/08/19
13	C008-SB006-060072-01	B9. 10549H	Soil	09/08/19
14	C008-SB007-024036-01	B9. 10550A	Soil	09/09/19
15	C008-SB007-060072-01	B9. 10551B	Soil	09/09/19
16	C008-SB008-048060-01	B9. 10552C	Soil	09/09/19

LDC #: 47161A59 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/3/20
SDG #: 1900152 Level IV Page: 2 of 2
Laboratory: National Analytical Radiation Environmental Laboratory Reviewer:
2nd Reviewer:

METHOD: Isotopic Uranium (NAREL ACT-02F-U)

17	C008-SB008-084096-01	B9. 10553D	Soil	09/09/19
18	C008-SB009-000012-01	B9. 10554E	Soil	09/09/19
19	C008-SB009-072084-01	B9. 10555F	Soil	09/09/19
20	C008-SB001-036048-01DUP	B9. 10537DDUP	Soil	09/08/19
21	C008-SB005-036048-01DUP	B9. 10546EDUP	Soil	09/08/19
22				
23				
24				

Notes:

Method: Radiochemistry(EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
II. Calibration				
Were all instruments and detectors calibration as required?	✓			
Were NIST traceable standards used for all calibrations?	✓			
Was the check source identified by activity and radionuclide?	✓			
Were check sources including background counts analyzed at the requiried frequency and within laboratory control limits?	✓			
III. Blanks				
Were blank analyses performed as required?	✓			
Were any activities detected in the blanks greater than the minimum detectable activity (MDA)? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spikes and Duplicates				
Were a matrix spike (MS) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.			✓	
Were the MS percent recoveries (%R) within the QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Was a duplicate sample anaylzed at the required frequency of 5% in this SDG?	✓			
Were all duplicate sample duplicate error rations (DER) ≤1.42?.	✓			
V. Laboratory control samples				
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 75-125%	✓			
VI. Sample Chemical/Carrier Recovery				
Was a tracer/carrier added to each sample?	✓			
Were tracer/carrier recoveries within the QC limits?	✓			
VII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
VIII. Sample Result Verification				
Were activities adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were the Minimum Detectable Activities (MDA) < RL?	✓			

Validation Area	Yes	No	NA	Findings/Comments
IX. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
X. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
XI. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 47161A59

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer:
2nd Reviewer:

METHOD: Radiochemistry, Method See Cover
Blank units: pCi/L **Associated sample units:** pCi/L
Sampling date: 9/8/19
Field blank type: (circle one) Field Blank / Rinsate / Other: Associated Samples: 1-13 (Qualify B)

Analyte	Blank ID	Action Limit	Sample Identification												
	RB-190908		1	2	3	4	5	6	7	8	9	10	11	12	13
U-234	0.136		0.444	0.420	0.815	0.688	0.527	0.407	1.75	0.506	1.91	0.725	0.921	0.377	1.10

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC# 47161A59

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: of
Reviewer:
2nd Reviewer:

Radiochemistry, Method see cover

Isotope	Activity (pCi/g)		RPD
	1	2	
U-234	0.444	0.420	6
U-235	0.0287	0.0357	22
U-238	0.556	0.355	44

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2020\47161A59.wpd

LDC #: 47161A59

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: QA
2nd Reviewer: 4

METHOD: Radiochemistry (Method: see cover)

Percent recoveries (%R) for a laboratory control sample, a matrix spike and a matrix spike duplicate sample were recaluculated using the following formula:

%R = Found / True x 100 Where, Found = activity of each analyte measured in the analysis of the sample.
True = activity of each analyte in the source.

A matrix spike and matrix spike duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample activity
D = Duplicate sample activity

Sample ID	Type of Analysis	Analyte	Found/S (units)	True/D (units)	Recalculated %R or RPD	Reported %R or RPD	Acceptable (Y/N)
LCS	Laboratory control sample	U-235	0.0780	0.0930	83.9	83.8	Y
	Matrix spike sample						
20	Duplicate RPD	U-234	0.444	0.404	9.4	9.4	Y
1	Chemical recovery	U-232	%R directly from raw data		73.4	73.43	Y

Comments: _____

LDC #: 47161A59

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: C
2nd reviewer:

METHOD: Radiochemistry (Method: see cover)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?

Analyte results for U-235 reported with a positive detect were recalculated and verified using the following equation:

Concentration = $\frac{(cpm - background)}{2.22 \times E \times SA \times Vol}$

E = Counter Efficiency
SA = Self-absorbance factor
Vol = Volume of sample

Recalculation:

6: $11.667 / 2.22(0.835)(0.1685)(0.736)(1000 min)(1018 g) =$

$0.04985 pCi/g$

#	Sample ID	Analyte	Reported Concentration (pCi/g)	Calculated Concentration (pCi/g)	Acceptable (Y/N)
	1	U-234	0.444	0.464	Y
	2	U-235	0.057	~~0.0375~~ 0.0375	
	3	U-238	0.696	0.759	
	4	U-234	0.688	0.793	
	5	U-238	0.604	0.666	
	6	U-235	0.0480	0.0499	
	7	U-234	1.75	2.39	
	8	U-238	0.529	0.543	
	9	U-235	0.0641	0.0815	
	10	U-234	0.725	0.817	
	11	U-235	0.0304	0.0337	
	12	U-238	0.379	0.385	
	13	U-234	1.10	1.28	
	14	U-235	0.0400	0.0881	
	15	U-238	0.567	0.610	
	16	U-234	0.439	0.447	
	17	U-235	0.0776	0.233	
	18	U-238	0.540	0.558	
	19	U-234	0.452	0.483	

Note:

LDC Report# 47161A73

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: CRU Site, NY

LDC Report Date: March 4, 2020

Parameters: Isotopic Thorium

Validation Level: Level IV

Laboratory: National Analytical Radiation Environmental Laboratory

Sample Delivery Group (SDG): 1900152

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
C008-SB001-036048-01	B9. 10537D	Soil	09/08/19
C008-SB001-036048-02	B9. 10538E	Soil	09/08/19
C008-SB001-108120-01	B9. 10539F	Soil	09/08/19
C008-SB002-024036-01	B9. 10540Y	Soil	09/08/19
C008-SB002-060072-01	B9. 10541Z	Soil	09/08/19
C008-SB003-000012-01	B9. 10542A	Soil	09/08/19
C008-SB003-072084-01	B9. 10543B	Soil	09/08/19
C008-SB004-012024-01	B9. 10544C	Soil	09/08/19
C008-SB004-084096-01	B9. 10545D	Soil	09/08/19
C008-SB005-036048-01	B9. 10546E	Soil	09/08/19
C008-SB005-060072-01	B9. 10547F	Soil	09/08/19
C008-SB006-024036-01	B9. 10548G	Soil	09/08/19
C008-SB006-060072-01	B9. 10549H	Soil	09/08/19
C008-SB007-024036-01	B9. 10550A	Soil	09/09/19
C008-SB007-060072-01	B9. 10551B	Soil	09/09/19
C008-SB008-048060-01	B9. 10552C	Soil	09/09/19
C008-SB008-084096-01	B9. 10553D	Soil	09/09/19
C008-SB009-000012-01	B9. 10554E	Soil	09/09/19
C008-SB009-072084-01	B9. 10555F	Soil	09/09/19
C008-SB001-036048-01DUP	B9. 10537DDUP	Soil	09/08/19
C008-SB005-036048-01DUP	B9. 10546EDUP	Soil	09/08/19

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Multi Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual (July 2004) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Isotopic Thorium by Method NAREL ACT-02F-TH

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

Counting and detector efficiency were determined for each detector and each radionuclide.

III. Continuing Calibration

Continuing calibration and background determination were performed at the required frequencies. Results were within laboratory control limits.

IV. Blanks

Laboratory blanks were analyzed as required by the method. Blank results contained less than the minimum detectable concentrations (MDC).

V. Field Blanks

Samples RB-190908 and RB-190909 (both from SDG 1900153) were identified as rinsate blanks. No contaminants were found.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicates (MSD) analyses were not required by the method.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

Samples C008-SB001-036048-01 and C008-SB001-036048-02 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Isotope	Activity (pCi/g)		RPD
	C008-SB001-036048-01	C008-SB001-036048-02	
Thorium-227	0.0293	0.0603	69
Thorium-228	0.632	0.597	6
Thorium-230	0.601	0.643	7
Thorium-232	0.573	0.567	1

X. Minimum Detectable Concentrations

All minimum detectable concentrations (MDC) met reporting limits (RL).

XI. Sample Result Verification

All sample result verifications were acceptable.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

CRU Site, NY
Isotopic Thorium - Data Qualification Summary - SDG 1900152

No Sample Data Qualified in this SDG

CRU Site, NY
Isotopic Thorium - Laboratory Blank Data Qualification Summary - SDG 1900152

No Sample Data Qualified in this SDG

CRU Site, NY
Isotopic Thorium - Field Blank Data Qualification Summary - SDG 1900152

No Sample Data Qualified in this SDG

LDC #: 47161A73 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/3/20
SDG #: 1900152 Level IV Page: 1 of 2
Laboratory: National Analytical Radiation Environmental Laboratory Reviewer:
2nd Reviewer:

METHOD: Isotopic Thorium (NAREL ACT-02F-TH)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	RB= RB-190908, RB-190909
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not required (1900153)
VII.	Duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	SW	(1,2)
X.	Tracer Recovery	A	
XI.	Minimum detectable activity (MDA)	A	
XII.	Sample result verification	A/N	
XIII	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	C008-SB001-036048-01	B9. 10537D	Soil	09/08/19
2	C008-SB001-036048-02	B9. 10538E	Soil	09/08/19
3	C008-SB001-108120-01	B9. 10539F	Soil	09/08/19
4	C008-SB002-024036-01	B9. 10540Y	Soil	09/08/19
5	C008-SB002-060072-01	B9. 10541Z	Soil	09/08/19
6	C008-SB003-000012-01	B9. 10542A	Soil	09/08/19
7	C008-SB003-072084-01	B9. 10543B	Soil	09/08/19
8	C008-SB004-012024-01	B9. 10544C	Soil	09/08/19
9	C008-SB004-084096-01	B9. 10545D	Soil	09/08/19
10	C008-SB005-036048-01	B9. 10546E	Soil	09/08/19
11	C008-SB005-060072-01	B9. 10547F	Soil	09/08/19
12	C008-SB006-024036-01	B9. 10548G	Soil	09/08/19
13	C008-SB006-060072-01	B9. 10549H	Soil	09/08/19
14	C008-SB007-024036-01	B9. 10550A	Soil	09/09/19
15	C008-SB007-060072-01	B9. 10551B	Soil	09/09/19
16	C008-SB008-048060-01	B9. 10552C	Soil	09/09/19

LDC #: 47161A73 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/30/20
SDG #: 1900152 Level IV Page: 2 of 2
Laboratory: National Analytical Radiation Environmental Laboratory Reviewer: G
2nd Reviewer: G

METHOD: Isotopic Thorium (NAREL ACT-02F-TH)

17	C008-SB008-084096-01	B9. 10553D	Soil	09/09/19
18	C008-SB009-000012-01	B9. 10554E	Soil	09/09/19
19	C008-SB009-072084-01	B9. 10555F	Soil	09/09/19
20	C008-SB001-036048-01DUP	B9. 10537DDUP	Soil	09/08/19
21	C008-SB005-036048-01DUP	B9. 10546EDUP	Soil	09/08/19
22				
23				
24				

Notes:

Method: Radiochemistry(EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
II. Calibration				
Were all instruments and detectors calibration as required?	✓			
Were NIST traceable standards used for all calibrations?	✓			
Was the check source identified by activity and radionuclide?	✓			
Were check sources including background counts analyzed at the requiried frequency and within laboratory control limits?	✓			
III. Blanks				
Were blank analyses performed as required?	✓			
Were any activities detected in the blanks greater than the minimum detectable activity (MDA)? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spikes and Duplicates				
Were a matrix spike (MS) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.			✓	
Were the MS percent recoveries (%R) within the QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Was a duplicate sample anaylzed at the required frequency of 5% in this SDG?	✓			
Were all duplicate sample duplicate error rations (DER) <1.42?.	✓			
V. Laboratory control samples				
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 75-125%	✓	✓		
VI. Sample Chemical/Carrier Recovery				
Was a tracer/carrier added to each sample?	✓			
Were tracer/carrier recoveries within the QC limits?	✓			
VII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
VIII. Sample Result Verification				
Were activities adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were the Minimum Detectable Activities (MDA) < RL?	✓			

Validation Area	Yes	No	NA	Findings/Comments
IX. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
X. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
XI. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC# 47161A73

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

Radiochemistry, Method see cover

Isotope	Activity (pCi/g)		RPD
	1	2	
Th-227	0.0293	0.0603	69
Th-228	0.632	0.597	6
Th-230	0.601	0.643	7
Th-232	0.573	0.567	1

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2020\47161A73.wpd

LDC #: 47161A73

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: QA
2nd Reviewer: X

METHOD: Radiochemistry (Method: see cover)

Percent recoveries (%R) for a laboratory control sample, a matrix spike and a matrix spike duplicate sample were recaluculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = activity of each analyte measured in the analysis of the sample.
True = activity of each analyte in the source.

A matrix spike and matrix spike duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample activity
D = Duplicate sample activity

Sample ID	Type of Analysis	Analyte	Found/S (units)	True/D (units)	Recalculated %R or RPD	Reported %R or RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Th-230	2.05	2.00	102.5	~~85~~ 102.3	Y
N	Matrix spike sample						
DO	Duplicate RPD	Th-230	0.601	0.694	14.36	14.36	Y
1	Chemical recovery	Th-229	% reported directly from raw data		100.3	100.26	Y

Comments: _____

LDC #: 42661A3

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: C
2nd reviewer: CT

METHOD: Radiochemistry (Method: See cover)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?

Analyte results for Th-232 reported with a positive detect were recalculated and verified using the following equation:

Concentration = (cpm - background) / (2.22 x E x SA x Vol)

E = Counter Efficiency
SA = Self-absorbance factor
Vol = Volume of sample

AS

Recalculation:

$282.333 / 2.22(0.1631)(0.872)(1000\,min)(1037\,l/s) =$

$0.8622\,pCi/g$

#	Sample ID	Analyte	Reported Concentration (pCi/g)	Calculated Concentration (pCi/g)	Acceptable (Y/N)
	1	Th-227	0.0293	0.0173	Y
	2	Th-228	0.597	0.627	
	3	Th-230	0.760	0.857	
	4	Th-232	0.906	0.971	
	5	Th-227	0.0671	0.0418	
	6	Th-228	0.703	0.731	
	7	Th-230	1.87	2.58	
	8	Th-232	0.838	0.862	
	9	Th-227	0.0592	0.0425	
	10	Th-228	0.684	0.719	
	11	Th-230	0.961	1.09	
	12	Th-232	0.551	0.557	
	13	Th-227	0.084	0.0556	
	14	Th-228	0.882	2.33	
	15	Th-230	1.29	1.49	
	16	Th-232	0.538	0.547	
	17	Th-227	0.0356	0.0414	
	18	Th-228	0.913	0.927	
	19	Th-230	0.769	0.848	↓

Note:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: CRU Site, NY

LDC Report Date: March 4, 2020

Parameters: Gamma Spectroscopy

Validation Level: Level IV

Laboratory: National Analytical Radiation Environmental Laboratory

Sample Delivery Group (SDG): 1900153

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
RB-190908	B9.10556G	Water	09/08/19
RB-190909	B9.10557H	Water	09/09/19
RB-190908DUP	B9.10556GDUP	Water	09/08/19

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Multi Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual (July 2004) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Gamma Spectroscopy by Method NAREL GAM-01

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

Counting and detector efficiency were determined for each detector and each radionuclide.

III. Continuing Calibration

Continuing calibration and background determination were performed at the required frequencies. Results were within laboratory control limits.

IV. Blanks

Laboratory blanks were analyzed as required by the method. Blank results contained less than the minimum detectable concentrations (MDC) with the following exceptions:

Blank ID	Isotope	Concentration	Associated Samples
PB (prep blank)	Thallium-208	3.87 pCi/L	All samples in SDG 1900153

Sample activities were compared to activities detected in the laboratory blanks. The sample activities were either not detected or were significantly greater (>5X blank activity) than the activities found in the associated laboratory blanks.

V. Field Blanks

Samples RB-190908 and RB-190909 were identified as rinsate blanks. No contaminants were found.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicates (MSD) analyses were not required by the method.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Minimum Detectable Concentrations

All minimum detectable concentrations (MDC) met reporting limits (RL).

XI. Sample Result Verification

All sample result verifications were acceptable.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

CRU Site, NY
Gamma Spectroscopy - Data Qualification Summary - SDG 1900153

No Sample Data Qualified in this SDG

CRU Site, NY
Gamma Spectroscopy - Laboratory Blank Data Qualification Summary - SDG 1900153

No Sample Data Qualified in this SDG

CRU Site, NY
Gamma Spectroscopy - Field Blank Data Qualification Summary - SDG 1900153

No Sample Data Qualified in this SDG

LDC #: 47161B35 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/3/20
SDG #: 1900153 Level IV Page: 1 of 1
Laboratory: National Analytical Radiation Environmental Laboratory Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Gamma Spectroscopy (NAREL GAM -01)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	SW	
V.	Field blanks	SW/ND	RB=1,2
VI.	Matrix Spike/Matrix Spike Duplicates	N	not required
VII.	Duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	N	
X.	Minimum detectable activity (MDA)	A	
XI.	Sample result verification	A	
XII	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	RB-190908	B9.10556G	Water	09/08/19
2	RB-190909	B9.10557H	Water	09/09/19
3	RB-190908DUP	B9.10556GDUP	Water	09/08/19
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

Notes:

All results < 2σ or < MDC

LDC #: 47161B35

VALIDATION FINDINGS CHECKLIST

Reviewer: CM
2nd Reviewer: CM

Method: Radiochemistry(EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
II. Calibration				
Were all instruments and detectors calibration as required?	✓			
Were NIST traceable standards used for all calibrations?	✓			
Was the check source identified by activity and radionuclide?	✓			
Were check sources including background counts analyzed at the requiried frequency and within laboratory control limits?	✓			
III. Blanks				
Were blank analyses performed as required?	✓			
Were any activities detected in the blanks greater than the minimum detectable activity (MDA)? If yes, please see the Blanks validation completeness worksheet.	✓			
IV. Matrix spikes and Duplicates				
Were a matrix spike (MS) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.			✓	
Were the MS percent recoveries (%R) within the QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Was a duplicate sample anaylzed at the required frequency of 5% in this SDG?	✓			
Were all duplicate sample duplicate error rations (DER) ≤1.42?.	✓			
V. Laboratory control samples				
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 75-125%	✓			
VI. Sample Chemical/Carrier Recovery				
Was a tracer/carrier added to each sample?			✓	
Were tracer/carrier recoveries within the QC limits?			✓	
VII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
VIII. Sample Result Verification				
Were activities adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were the Minimum Detectable Activities (MDA) < RL?	✓			

Validation Area	Yes	No	NA	Findings/Comments
IX. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
X. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XI. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 47161B35

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer:
2nd Reviewer:

METHOD: Radiochemistry, Method See Cover

Conc. units: pCi/L **Associated Samples:** All

Isotope	Blank ID	Blank Action Limit	Sample Identification										
	PB		No Qualifiers (ND)										
Tl-208	3.87												

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 47161B35

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: a
2nd Reviewer:

METHOD: Radiochemistry (Method: see cover)

Percent recoveries (%R) for a laboratory control sample, a matrix spike and a matrix spike duplicate sample were recaluculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = activity of each analyte measured in the analysis of the sample.
True = activity of each analyte in the source.

A matrix spike and matrix spike duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample activity
D = Duplicate sample activity

Sample ID	Type of Analysis	Analyte	Found/S (units)	True/D (units)	Recalculated %R or RPD	Reported %R or RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Ra-226	3940	3950	99.7	99.8	Y
	Matrix spike sample						
3	Duplicate RPD	K-40	ND	ND	-	-	Y
	Chemical recovery						

Comments: _____

LDC #: 47161B35

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: C
2nd reviewer: A

METHOD: Radiochemistry (Method: See cover)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?

Analyte results for _____ reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$$\frac{(cpm - background)}{2.22 \times E \times SA \times Vol}$$

E = Counter Efficiency
SA = Self-absorbance factor
Vol = Volume of sample

Recalculation:

All ND

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)

Note: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: CRU Site, NY

LDC Report Date: March 4, 2020

Parameters: Isotopic Uranium

Validation Level: Level IV

Laboratory: National Analytical Radiation Environmental Laboratory

Sample Delivery Group (SDG): 1900153

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
RB-190908	B9.10556G	Water	09/08/19
RB-190909	B9.10557H	Water	09/09/19
RB-190908DUP	B9.10556GDUP	Water	09/08/19

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Multi Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual (July 2004) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Isotopic Uranium by Method NAREL U-EICHROM

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

Counting and detector efficiency were determined for each detector and each radionuclide.

III. Continuing Calibration

Continuing calibration and background determination were performed at the required frequencies. Results were within laboratory control limits.

IV. Blanks

Laboratory blanks were analyzed as required by the method. Blank results contained less than the minimum detectable concentrations (MDC).

V. Field Blanks

Samples RB-190908 and RB-190909 were identified as rinsate blanks. No contaminants were found with the following exceptions:

Blank ID	Sampling Date	Isotope	Activity	Associated Samples
RB-190908	09/08/19	Uranium-234	0.136 pCi/L	No associated samples in this SDG

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicates (MSD) analyses were not required by the method.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Isotope	%R (Limits)	Associated Samples	Flag	A or P
LCS	Uranium-235	160.1 (75-125)	All samples in SDG 1900153	NA	-

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Minimum Detectable Concentrations

All minimum detectable concentrations (MDC) met reporting limits (RL).

XI. Sample Result Verification

All sample result verifications were acceptable.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

CRU Site, NY
Isotopic Uranium - Data Qualification Summary - SDG 1900153

No Sample Data Qualified in this SDG

CRU Site, NY
Isotopic Uranium - Laboratory Blank Data Qualification Summary - SDG 1900153

No Sample Data Qualified in this SDG

CRU Site, NY
Isotopic Uranium - Field Blank Data Qualification Summary - SDG 1900153

No Sample Data Qualified in this SDG

LDC #: 47161B59 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/3/20
SDG #: 1900153 Level IV Page: 1 of 1
Laboratory: National Analytical Radiation Environmental Laboratory Reviewer: G
2nd Reviewer: G

METHOD: Isotopic Uranium (NAREL U-EICHROM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	SW	RB=1,2*
VI.	Matrix Spike/Matrix Spike Duplicates	N	not required
VII.	Duplicates	A	
VIII.	Laboratory control samples	SW	LCS
IX.	Field duplicates	N	
X.	Tracer Recovery	A	
XI.	Minimum detectable activity (MDA)	A	
XII.	Sample result verification	A	
XIII	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
* ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	RB-190908	B9.10556G	Water	09/08/19
2	RB-190909	B9.10557H	Water	09/09/19
3	RB-190908DUP	B9.10556GDUP	Water	09/08/19
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

Notes:

LDC #: 47161D59

VALIDATION FINDINGS CHECKLIST

Reviewer: CM
2nd Reviewer: [illegible]

Method: Radiochemistry (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
II. Calibration				
Were all instruments and detectors calibration as required?	✓			
Were NIST traceable standards used for all calibrations?	✓			
Was the check source identified by activity and radionuclide?	✓			
Were check sources including background counts analyzed at the requiried frequency and within laboratory control limits?		✓		
III. Blanks				
Were blank analyses performed as required?	✓			
Were any activities detected in the blanks greater than the minimum detectable activity (MDA)? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spikes and Duplicates				
Were a matrix spike (MS) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.			✓	
Were the MS percent recoveries (%R) within the QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Was a duplicate sample anaylzed at the required frequency of 5% in this SDG?	✓			
Were all duplicate sample duplicate error rations (DER) ≤1.42?.				
V. Laboratory control samples				
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the ~~75-125%~~ QC limits		✓		
VI. Sample Chemical/Carrier Recovery				
Was a tracer/carrier added to each sample?	✓			
Were tracer/carrier recoveries within the QC limits?	✓			
VII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
VIII. Sample Result Verification				
Were activities adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were the Minimum Detectable Activities (MDA) < RL?	✓			

Validation Area	Yes	No	NA	Findings/Comments
IX. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
X. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XI. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			

LDC #: 47161B59

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer:
2nd Reviewer:

METHOD: Radiochemistry, Method See Cover
Blank units: pCi/L **Associated sample units:** pCi/L
Sampling date: 9/8/19
Field blank type: (circle one) Field Blank / Rinsate / Other:_____ Associated Samples: None

Analyte	Blank ID	Action Limit	Sample Identification							
	1									
U-234	0.136									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 47161B5F

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: Radiochemistry (Method: see cover)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed at the required frequency in this SDG?

Y (N) N/A Were all LCS and LCSD percent recoveries (%R) within the control limits ~~of 75-125% and RPD <20%?~~

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	LCS/LCSD ID	Matrix	Analyte	LCS %R (limits)	LCSD %R (limits)	RPD (limits)	Associated Samples	Qualifications
	LCS	W	U-235	160.1 (~~upper control limit~~ 75-125)			All	Jdet (PCM)

Comments:

LDC #: 47161B57

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: AA
2nd Reviewer: [illegible]

METHOD: Radiochemistry (Method: see cover)

Percent recoveries (%R) for a laboratory control sample, a matrix spike and a matrix spike duplicate sample were recaluculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = activity of each analyte measured in the analysis of the sample.
True = activity of each analyte in the source.

A matrix spike and matrix spike duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample activity
D = Duplicate sample activity

Sample ID	Type of Analysis	Analyte	Found/S (units)	True/D (units)	Recalculated %R or RPD	Reported %R or RPD	Acceptable (Y/N)
LCS	Laboratory control sample	U-238	2.06	2.02	102.0	102.1	Y
	Matrix spike sample						
3	Duplicate RPD	U-235	ND	ND	—	—	Y
1	Chemical recovery	U-232	From raw data		91.8	91.84	Y

Comments: _____

LDC #: 47161B59

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: C
2nd reviewer: CK

METHOD: Radiochemistry (Method: See cover)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?

Analyte results for U-234 reported with a positive detect were recalculated and verified using the following equation:

Concentration = $\frac{(cpm - background)}{2.22 \times E \times SA \times Vol}$

Recalculation:

$\frac{9}{2.22(1000\ min)(0.162)(0.2\ L)(0.918)} = 0.1363\ pCi/L$

E = Counter Efficiency
SA = Self-absorbance factor
Vol = Volume of sample

#	Sample ID	Analyte	Reported Concentration (pCi/L)	Calculated Concentration (pCi/L)	Acceptable (Y/N)
	1	U-234	0.136	0.136	Y

Note: _____

LDC Report# 47161B73

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: CRU Site, NY

LDC Report Date: March 4, 2020

Parameters: Isotopic Thorium

Validation Level: Level IV

Laboratory: National Analytical Radiation Environmental Laboratory

Sample Delivery Group (SDG): 1900153

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
RB-190908	B9.10556G	Water	09/08/19
RB-190909	B9.10557H	Water	09/09/19
RB-190908DUP	B9.10556GDUP	Water	09/08/19

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Multi Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual (July 2004) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Isotopic Thorium by Method NAREL TH-EICHROM

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

Counting and detector efficiency were determined for each detector and each radionuclide.

III. Continuing Calibration

Continuing calibration and background determination were performed at the required frequencies. Results were within laboratory control limits.

IV. Blanks

Laboratory blanks were analyzed as required by the method. Blank results contained less than the minimum detectable concentrations (MDC).

V. Field Blanks

Samples RB-190908 and RB-190909 were identified as rinsate blanks. No contaminants were found.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicates (MSD) analyses were not required by the method.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Minimum Detectable Concentrations

All minimum detectable concentrations (MDC) met reporting limits (RL).

XI. Sample Result Verification

All sample result verifications were acceptable.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

CRU Site, NY
Isotopic Thorium - Data Qualification Summary - SDG 1900153

No Sample Data Qualified in this SDG

CRU Site, NY
Isotopic Thorium - Laboratory Blank Data Qualification Summary - SDG 1900153

No Sample Data Qualified in this SDG

CRU Site, NY
Isotopic Thorium - Field Blank Data Qualification Summary - SDG 1900153

No Sample Data Qualified in this SDG

LDC #: 47161B73
SDG #: 1900153
Laboratory: National Analytical Radiation Environmental Laboratory

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 3/3/20
Page: 1 of 1
Reviewer: A
2nd Reviewer: A

METHOD: Isotopic Thorium (NAREL TH-EICHROM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A A	
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	RB=1, 2
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not required
VII.	Duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	N	
X.	Tracer Recovery	A	
XI.	Minimum detectable activity (MDA)	A	
XII.	Sample result verification	A	
XIII	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	RB-190908	B9.10556G	Water	09/08/19
2	RB-190909	B9.10557H	Water	09/09/19
3	RB-190908DUP	B9.10556GDUP	Water	09/08/19
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

Notes:

results < MDC or < 2σ

Method: Radiochemistry(EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
II. Calibration				
Were all instruments and detectors calibration as required?	✓			
Were NIST traceable standards used for all calibrations?	✓			
Was the check source identified by activity and radionuclide?				
Were check sources including background counts analyzed at the requiried frequency and within laboratory control limits?	✓			
III. Blanks				
Were blank analyses performed as required?	✓			
Were any activities detected in the blanks greater than the minimum detectable activity (MDA)? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spikes and Duplicates				
Were a matrix spike (MS) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.			✓	
Were the MS percent recoveries (%R) within the QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Was a duplicate sample anaylzed at the required frequency of 5% in this SDG?	✓			
Were all duplicate sample duplicate error rations (DER) <1.42?.	✓			
V. Laboratory control samples				
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 75-125%	✓			
VI. Sample Chemical/Carrier Recovery				
Was a tracer/carrier added to each sample?	✓			
Were tracer/carrier recoveries within the QC limits?	✓			
VII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
VIII. Sample Result Verification				
Were activities adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were the Minimum Detectable Activities (MDA) < RL?	✓			

Validation Area	Yes	No	NA	Findings/Comments
IX. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
X. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XI. Field blanks				
Field blanks were identified in this SDG.	✓	✓		
Target analytes were detected in the field blanks.				

LDC #: 9716B73

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: a
2nd Reviewer: a

METHOD: Radiochemistry (Method: see cover)

Percent recoveries (%R) for a laboratory control sample, a matrix spike and a matrix spike duplicate sample were recaluculated using the following formula:

%R = Found / True x 100 Where, Found = activity of each analyte measured in the analysis of the sample.
True = activity of each analyte in the source.

A matrix spike and matrix spike duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample activity
D = Duplicate sample activity

Sample ID	Type of Analysis	Analyte	Found/S (units)	True/D (units)	Recalculated %R or RPD	Reported %R or RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Th-230	2.08	1.99	104.5	104.5	Y
	Matrix spike sample						
3	Duplicate RPD	Th-227	ND	ND	—	—	Y
1	Chemical recovery	~~Th-234~~ Th-229	Taken directly from raw data		96.9	96.89	Y

Comments: _____

LDC #: 47161B73

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: C
2nd reviewer: CT

METHOD: Radiochemistry (Method: See cover)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?

Analyte results for _____ reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$$\frac{(cpm - background)}{2.22 \times E \times SA \times Vol}$$

E = Counter Efficiency
SA = Self-absorbance factor
Vol = Volume of sample

Recalculation:

all ND

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)

Note: _____

CRU Site - LDC# 47161A

SDG: 1900152

Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB001-036048-01	B9.10537D	Th232	11/14/2019	5.730e-01			1.600e-02	9.560e-02	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Th230	11/14/2019	6.010e-01			6.240e-02	1.050e-01	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Th228	11/14/2019	6.320e-01			2.830e-02	1.020e-01	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Th227	11/14/2019	2.930e-02			2.450e-02	2.630e-02	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB001-036048-01	B9.10537D	U235	11/14/2019	2.870e-02			2.650e-02	2.500e-02	PCI/GDRY
C008-SB001-036048-01	B9.10537D	U238	11/14/2019	5.560e-01			2.720e-02	1.060e-01	PCI/GDRY
C008-SB001-036048-01	B9.10537D	U234	11/14/2019	4.440e-01		U	2.910e-02	9.200e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB001-036048-01	B9.10537D	Th234	11/19/2019	4.910e-01	J		2.800e-01	2.130e-01	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Tl208	11/19/2019	2.220e-01	J		1.100e-02	2.680e-02	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Ra228	11/19/2019	6.830e-01			3.680e-02	7.890e-02	PCI/GDRY
C008-SB001-036048-01	B9.10537D	K40	11/19/2019	1.710e+01			7.650e-02	1.860e+00	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Bi212	11/19/2019	8.410e-01	J		1.340e-01	1.620e-01	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Bi214	11/19/2019	1.660e+00	J		2.030e-02	1.810e-01	PCI/GDRY
C008-SB001-036048-01	B9.10537D	U235	11/19/2019	2.150e-02			7.590e-02	4.600e-02	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Cs137	11/19/2019	1.820e-02			7.420e-03	5.160e-03	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Ra226	11/19/2019	2.440e+00	J		2.070e-01	3.150e-01	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Pb210	11/19/2019	1.910e+00	J		2.980e-01	3.180e-01	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Pb212	11/19/2019	9.530e-01	J		2.190e-02	1.060e-01	PCI/GDRY
C008-SB001-036048-01	B9.10537D	Pb214	11/19/2019	1.940e+00	J		2.490e-02	2.110e-01	PCI/GDRY

SDG: 1900152

Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB001-036048-02	B9.10538E	Th232	11/14/2019	5.670e-01			2.260e-02	1.000e-01	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Th227	11/14/2019	6.030e-02			2.750e-02	3.900e-02	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Th228	11/14/2019	5.970e-01			2.950e-02	1.040e-01	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Th230	11/14/2019	6.430e-01			6.310e-02	1.140e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB001-036048-02	B9.10538E	U238	11/14/2019	3.550e-01			2.510e-02	7.760e-02	PCI/GDRY
C008-SB001-036048-02	B9.10538E	U234	11/14/2019	4.200e-01		U	2.050e-02	8.560e-02	PCI/GDRY
C008-SB001-036048-02	B9.10538E	U235	11/14/2019	3.570e-02			1.990e-02	2.580e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB001-036048-02	B9.10538E	Th234	11/19/2019	5.320e-01	J		2.850e-01	1.930e-01	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Tl208	11/19/2019	2.700e-01	J		1.480e-02	3.180e-02	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Ra228	11/19/2019	7.870e-01			5.980e-02	9.370e-02	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Ra226	11/19/2019	3.030e+00	J		2.690e-01	3.930e-01	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Pb214	11/19/2019	2.400e+00	J		3.110e-02	2.610e-01	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Pb212	11/19/2019	7.190e-01	J		2.250e-02	8.030e-02	PCI/GDRY
C008-SB001-036048-02	B9.10538E	K40	11/19/2019	1.720e+01			1.020e-01	1.870e+00	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Cs137	11/19/2019	2.080e-02			1.060e-02	8.800e-03	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Bi214	11/19/2019	2.090e+00	J		2.200e-02	2.270e-01	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Bi212	11/19/2019	8.460e-01	J		1.400e-01	1.400e-01	PCI/GDRY
C008-SB001-036048-02	B9.10538E	Pb210	11/19/2019	2.000e+00	J		2.990e-01	3.140e-01	PCI/GDRY
C008-SB001-036048-02	B9.10538E	U235	11/19/2019	4.930e-02	J		9.120e-02	5.560e-02	PCI/GDRY

SDG: 1900152

Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB001-108120-01	B9.10539F	Th232	11/14/2019	7.560e-01			1.880e-02	1.170e-01	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Th227	11/14/2019	2.500e-02			2.510e-02	2.500e-02	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Th228	11/14/2019	8.170e-01			1.480e-02	1.230e-01	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Th230	11/14/2019	7.600e-01			6.090e-02	1.220e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB001-108120-01	B9.10539F	U238	11/14/2019	6.960e-01			1.440e-02	1.110e-01	PCI/GDRY
C008-SB001-108120-01	B9.10539F	U235	11/14/2019	5.030e-02			2.120e-02	2.860e-02	PCI/GDRY
C008-SB001-108120-01	B9.10539F	U234	11/14/2019	8.150e-01		U	2.320e-02	1.240e-01	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB001-108120-01	B9.10539F	U235	11/19/2019	9.330e-02	J		6.450e-02	5.020e-02	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Th234	11/19/2019	7.530e-01	J		2.010e-01	1.680e-01	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Pb212	11/19/2019	9.740e-01	J		2.500e-02	1.090e-01	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Ra228	11/19/2019	8.550e-01			3.760e-02	9.930e-02	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Tl208	11/19/2019	2.610e-01	J		1.340e-02	3.200e-02	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Bi212	11/19/2019	1.010e+00	J		1.250e-01	1.600e-01	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Bi214	11/19/2019	5.980e-01	J		2.550e-02	7.020e-02	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Cs137	11/19/2019	-5.250e-03			1.210e-02	7.360e-03	PCI/GDRY
C008-SB001-108120-01	B9.10539F	K40	11/19/2019	1.120e+01			9.060e-02	1.230e+00	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Pb210	11/19/2019	5.500e-01	J		1.610e-01	1.350e-01	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Ra226	11/19/2019	1.480e+00	J		1.990e-01	2.270e-01	PCI/GDRY
C008-SB001-108120-01	B9.10539F	Pb214	11/19/2019	7.160e-01	J		2.520e-02	8.150e-02	PCI/GDRY

SDG: 1900152

Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB002-024036-01	B9.10540Y	Th227	11/14/2019	4.900e-02			3.130e-02	3.460e-02	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Th230	11/14/2019	1.250e+00			5.880e-02	1.740e-01	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Th232	11/14/2019	9.060e-01			1.640e-02	1.340e-01	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Th228	11/14/2019	9.510e-01			2.010e-02	1.390e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB002-024036-01	B9.10540Y	U234	11/14/2019	6.880e-01		U	1.920e-02	1.250e-01	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	U235	11/14/2019	4.120e-02			2.300e-02	2.980e-02	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	U238	11/14/2019	7.820e-01			2.360e-02	1.370e-01	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB002-024036-01	B9.10540Y	Th234	11/20/2019	9.770e-01	J		3.870e-01	2.830e-01	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Bi212	11/20/2019	1.050e+00	J		1.790e-01	1.860e-01	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Bi214	11/20/2019	4.240e+00	J		2.660e-02	4.570e-01	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Cs137	11/20/2019	9.290e-02			1.200e-02	1.430e-02	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	K40	11/20/2019	1.240e+01			1.290e-01	1.360e+00	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Pb210	11/20/2019	4.520e+00	J		3.920e-01	5.960e-01	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Pb212	11/20/2019	8.990e-01	J		3.210e-02	1.010e-01	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Pb214	11/20/2019	4.830e+00	J		2.560e-02	5.220e-01	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Tl208	11/20/2019	3.280e-01	J		1.850e-02	3.930e-02	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	U235	11/20/2019	8.510e-02	J		1.150e-01	7.070e-02	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Ra226	11/20/2019	5.860e+00	J		3.410e-01	6.940e-01	PCI/GDRY
C008-SB002-024036-01	B9.10540Y	Ra228	11/20/2019	9.700e-01			6.510e-02	1.160e-01	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB002-060072-01	B9.10541Z	Th227	11/14/2019	6.710e-02			2.590e-02	3.970e-02	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Th228	11/14/2019	6.410e-01			2.230e-02	1.060e-01	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Th230	11/14/2019	7.410e-01			6.090e-02	1.220e-01	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Th232	11/14/2019	6.210e-01			2.130e-02	1.040e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB002-060072-01	B9.10541Z	U235	11/14/2019	2.250e-02			2.930e-02	2.310e-02	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	U234	11/14/2019	5.270e-01		U	2.860e-02	1.020e-01	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	U238	11/14/2019	6.040e-01			2.860e-02	1.110e-01	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB002-060072-01	B9.10541Z	Bi212	11/25/2019	8.450e-01	J		1.570e-01	1.720e-01	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Pb214	11/25/2019	2.150e+00	J		3.000e-02	2.370e-01	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Ra226	11/25/2019	2.630e+00	J		2.590e-01	3.630e-01	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Ra228	11/25/2019	7.780e-01			5.400e-02	9.260e-02	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Th234	11/25/2019	7.310e-01	J		3.200e-01	2.320e-01	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Tl208	11/25/2019	2.290e-01	J		1.230e-02	2.700e-02	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Pb210	11/25/2019	2.300e+00	J		3.290e-01	3.600e-01	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	K40	11/25/2019	1.050e+01			1.140e-01	1.180e+00	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Bi214	11/25/2019	1.870e+00	J		2.380e-02	2.070e-01	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Pb212	11/25/2019	7.460e-01	J		1.860e-02	8.370e-02	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	U235	11/25/2019	-2.730e-02			8.420e-02	5.480e-02	PCI/GDRY
C008-SB002-060072-01	B9.10541Z	Cs137	11/25/2019	2.860e-02			1.550e-02	1.010e-02	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB003-000012-01	B9.10542A	Th228	11/14/2019	7.030e-01			2.940e-02	1.140e-01	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Th232	11/14/2019	6.370e-01			2.180e-02	1.060e-01	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Th230	11/14/2019	4.930e-01			6.370e-02	9.640e-02	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Th227	11/14/2019	1.230e-02			3.660e-02	2.200e-02	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB003-000012-01	B9.10542A	U235	11/14/2019	4.800e-02			2.540e-02	3.080e-02	PCI/GDRY
C008-SB003-000012-01	B9.10542A	U238	11/14/2019	4.330e-01			1.720e-02	8.830e-02	PCI/GDRY
C008-SB003-000012-01	B9.10542A	U234	11/14/2019	4.070e-01		U	2.120e-02	8.530e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB003-000012-01	B9.10542A	Bi214	11/20/2019	9.320e-01	J		2.160e-02	1.040e-01	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Pb214	11/20/2019	1.070e+00	J		2.590e-02	1.190e-01	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Cs137	11/20/2019	2.760e-02			8.190e-03	7.120e-03	PCI/GDRY
C008-SB003-000012-01	B9.10542A	K40	11/20/2019	1.520e+01			8.760e-02	1.660e+00	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Pb210	11/20/2019	1.030e+00	J		2.680e-01	2.430e-01	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Pb212	11/20/2019	8.870e-01	J		2.530e-02	1.000e-01	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Ra226	11/20/2019	1.840e+00	J		2.120e-01	2.680e-01	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Th234	11/20/2019	5.730e-01	J		2.740e-01	2.250e-01	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Tl208	11/20/2019	2.380e-01	J		1.010e-02	2.800e-02	PCI/GDRY
C008-SB003-000012-01	B9.10542A	U235	11/20/2019	5.060e-03			5.730e-02	3.460e-02	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Bi212	11/20/2019	9.080e-01	J		1.430e-01	1.710e-01	PCI/GDRY
C008-SB003-000012-01	B9.10542A	Ra228	11/20/2019	8.000e-01			3.690e-02	9.490e-02	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB003-072084-01	B9.10543B	Th232	11/14/2019	2.140e+00			3.370e-02	3.520e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Th227	11/14/2019	1.680e-01			4.690e-02	8.600e-02	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Th228	11/14/2019	1.940e+00			4.560e-02	3.250e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Th230	11/14/2019	1.870e+00			6.900e-02	3.190e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB003-072084-01	B9.10543B	U234	11/14/2019	1.750e+00		U	2.140e-02	2.420e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	U238	11/14/2019	1.780e+00			2.410e-02	2.460e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	U235	11/14/2019	9.990e-02			2.090e-02	4.460e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB003-072084-01	B9.10543B	Bi214	11/21/2019	1.710e+00	J		2.080e-02	1.890e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Ra226	11/21/2019	3.510e+00	J		2.920e-01	4.600e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Pb214	11/21/2019	1.920e+00	J		3.110e-02	2.260e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Pb212	11/21/2019	2.220e+00	J		1.790e-02	2.450e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Pb210	11/21/2019	1.170e+00	J		1.880e-01	1.960e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Th234	11/21/2019	1.740e+00	J		2.390e-01	2.450e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Cs137	11/21/2019	-6.300e-03			1.700e-02	1.030e-02	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Tl208	11/21/2019	7.220e-01	J		1.380e-02	8.110e-02	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Bi212	11/21/2019	2.340e+00	J		1.600e-01	3.020e-01	PCI/GDRY
C008-SB003-072084-01	B9.10543B	K40	11/21/2019	1.100e+01			1.010e-01	1.230e+00	PCI/GDRY
C008-SB003-072084-01	B9.10543B	U235	11/21/2019	1.870e-01	J		8.310e-02	6.570e-02	PCI/GDRY
C008-SB003-072084-01	B9.10543B	Ra228	11/21/2019	2.290e+00			3.930e-02	2.550e-01	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB004-012024-01	B9.10544C	Th232	11/14/2019	8.380e-01			2.170e-02	1.280e-01	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Th230	11/14/2019	6.190e-01			6.370e-02	1.100e-01	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Th228	11/14/2019	8.440e-01			2.710e-02	1.280e-01	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Th227	11/14/2019	4.030e-02			3.250e-02	3.240e-02	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB004-012024-01	B9.10544C	U234	11/14/2019	5.060e-01		U	4.310e-02	1.070e-01	PCI/GDRY
C008-SB004-012024-01	B9.10544C	U238	11/14/2019	5.290e-01			4.820e-02	1.100e-01	PCI/GDRY
C008-SB004-012024-01	B9.10544C	U235	11/14/2019	2.610e-02			4.820e-02	3.120e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB004-012024-01	B9.10544C	Pb214	11/22/2019	6.870e-01	J		1.840e-02	7.690e-02	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Ra228	11/22/2019	7.270e-01			2.880e-02	8.210e-02	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Th234	11/22/2019	6.460e-01	J		2.260e-01	1.850e-01	PCI/GDRY
C008-SB004-012024-01	B9.10544C	U235	11/22/2019	1.810e-02			5.930e-02	3.600e-02	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Bi212	11/22/2019	7.900e-01	J		1.050e-01	1.340e-01	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Pb212	11/22/2019	8.580e-01	J		1.820e-02	9.530e-02	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Pb210	11/22/2019	6.760e-01	J		2.210e-01	1.770e-01	PCI/GDRY
C008-SB004-012024-01	B9.10544C	K40	11/22/2019	1.280e+01			6.220e-02	1.390e+00	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Bi214	11/22/2019	5.850e-01	J		1.670e-02	6.600e-02	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Tl208	11/22/2019	2.270e-01	J		7.340e-03	2.580e-02	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Cs137	11/22/2019	2.870e-02			8.830e-03	6.490e-03	PCI/GDRY
C008-SB004-012024-01	B9.10544C	Ra226	11/22/2019	1.180e+00	J		1.620e-01	1.840e-01	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB004-084096-01	B9.10545D	Th230	11/14/2019	1.490e+00			5.560e-02	2.050e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Th228	11/14/2019	1.670e+00			2.070e-02	2.210e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Th232	11/14/2019	1.760e+00			1.930e-02	2.300e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Th227	11/14/2019	5.920e-02			3.630e-02	3.900e-02	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB004-084096-01	B9.10545D	U238	11/14/2019	1.960e+00			1.640e-02	2.580e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	U234	11/14/2019	1.910e+00		U	2.020e-02	2.520e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	U235	11/14/2019	6.410e-02			2.730e-02	3.510e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB004-084096-01	B9.10545D	Th228	11/20/2019	5.450e+00			3.850e+00	2.810e+00	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Ra226	11/20/2019	3.900e+00	J		3.110e-01	5.060e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Th234	11/20/2019	1.910e+00	J		2.560e-01	2.690e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Tl208	11/20/2019	6.690e-01	J		1.700e-02	7.500e-02	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Ra228	11/20/2019	2.170e+00			5.430e-02	2.400e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	U235	11/20/2019	1.590e-01	J		8.330e-02	5.970e-02	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Cs137	11/20/2019	-8.760e-03			1.900e-02	1.150e-02	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Pb214	11/20/2019	1.980e+00	J		3.560e-02	2.170e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Pb212	11/20/2019	2.250e+00	J		2.280e-02	2.440e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Pb210	11/20/2019	1.460e+00	J		2.170e-01	2.360e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	K40	11/20/2019	9.980e+00			1.760e-01	1.120e+00	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Bi214	11/20/2019	1.600e+00	J		2.800e-02	1.760e-01	PCI/GDRY
C008-SB004-084096-01	B9.10545D	Bi212	11/20/2019	2.450e+00	J		2.210e-01	3.490e-01	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB005-036048-01	B9.10546E	Th232	11/19/2019	7.350e-01			1.620e-02	1.080e-01	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Th230	11/19/2019	1.820e+00			5.490e-02	2.160e-01	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Th227	11/19/2019	5.580e-02			2.150e-02	3.300e-02	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Th228	11/19/2019	6.840e-01			2.870e-02	1.030e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB005-036048-01	B9.10546E	U238	11/20/2019	6.730e-01			3.180e-02	1.220e-01	PCI/GDRY
C008-SB005-036048-01	B9.10546E	U234	11/20/2019	7.250e-01		U	2.560e-02	1.280e-01	PCI/GDRY
C008-SB005-036048-01	B9.10546E	U235	11/20/2019	2.650e-02			2.220e-02	2.390e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB005-036048-01	B9.10546E	Bi214	11/22/2019	4.540e+00	J		2.610e-02	4.890e-01	PCI/GDRY
C008-SB005-036048-01	B9.10546E	K40	11/22/2019	1.310e+01			1.240e-01	1.420e+00	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Pb210	11/22/2019	4.810e+00	J		3.810e-01	6.210e-01	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Pb212	11/22/2019	7.970e-01	J		3.100e-02	9.040e-02	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Pb214	11/22/2019	5.230e+00	J		3.480e-02	5.650e-01	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Ra226	11/22/2019	5.880e+00	J		3.140e-01	6.850e-01	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Th234	11/22/2019	7.420e-01	J		3.650e-01	2.540e-01	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Bi212	11/22/2019	9.800e-01	J		1.860e-01	1.950e-01	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Tl208	11/22/2019	2.820e-01	J		1.320e-02	3.190e-02	PCI/GDRY
C008-SB005-036048-01	B9.10546E	U235	11/22/2019	7.730e-02	J		1.100e-01	6.730e-02	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Ra228	11/22/2019	8.500e-01			5.820e-02	9.940e-02	PCI/GDRY
C008-SB005-036048-01	B9.10546E	Cs137	11/22/2019	5.480e-02			1.200e-02	1.180e-02	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB005-060072-01	B9.10547F	Th227	11/19/2019	5.340e-02			2.680e-02	3.630e-02	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Th228	11/19/2019	9.660e-01			2.610e-02	1.430e-01	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Th230	11/19/2019	9.610e-01			6.110e-02	1.470e-01	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Th232	11/19/2019	9.840e-01			1.990e-02	1.450e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB005-060072-01	B9.10547F	U238	11/20/2019	8.230e-01			3.640e-02	1.510e-01	PCI/GDRY
C008-SB005-060072-01	B9.10547F	U235	11/20/2019	3.040e-02			3.310e-02	2.920e-02	PCI/GDRY
C008-SB005-060072-01	B9.10547F	U234	11/20/2019	9.210e-01		U	2.760e-02	1.630e-01	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB005-060072-01	B9.10547F	U235	11/22/2019	7.730e-02	J		6.990e-02	4.800e-02	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Ra228	11/22/2019	1.010e+00			4.620e-02	1.170e-01	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Tl208	11/22/2019	3.210e-01	J		1.130e-02	3.660e-02	PCI/GDRY
C008-SB005-060072-01	B9.10547F	K40	11/22/2019	1.420e+01			1.000e-01	1.550e+00	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Pb214	11/22/2019	2.060e+00	J		2.560e-02	2.240e-01	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Pb212	11/22/2019	9.270e-01	J		2.430e-02	1.030e-01	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Pb210	11/22/2019	2.030e+00	J		3.480e-01	3.400e-01	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Th234	11/22/2019	9.760e-01	J		3.400e-01	2.600e-01	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Bi212	11/22/2019	1.080e+00	J		1.220e-01	1.580e-01	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Bi214	11/22/2019	1.810e+00	J		2.170e-02	1.970e-01	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Cs137	11/22/2019	1.640e-02			9.200e-03	7.310e-03	PCI/GDRY
C008-SB005-060072-01	B9.10547F	Ra226	11/22/2019	2.810e+00	J		2.640e-01	3.710e-01	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB006-024036-01	B9.10548G	Th230	11/19/2019	3.980e-01			6.610e-02	8.870e-02	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Th228	11/19/2019	6.790e-01			2.900e-02	1.140e-01	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Th227	11/19/2019	3.200e-02			4.590e-02	3.330e-02	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Th232	11/19/2019	5.510e-01			1.830e-02	9.940e-02	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB006-024036-01	B9.10548G	U235	11/20/2019	9.110e-03			3.450e-02	1.930e-02	PCI/GDRY
C008-SB006-024036-01	B9.10548G	U234	11/20/2019	3.770e-01		U	2.880e-02	8.550e-02	PCI/GDRY
C008-SB006-024036-01	B9.10548G	U238	11/20/2019	3.790e-01			2.350e-02	8.550e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB006-024036-01	B9.10548G	U235	11/21/2019	1.490e-02			6.100e-02	3.690e-02	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Tl208	11/21/2019	2.370e-01	J		8.700e-03	2.730e-02	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Bi214	11/21/2019	3.710e-01	J		1.730e-02	4.400e-02	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Cs137	11/21/2019	3.780e-03			9.700e-03	5.890e-03	PCI/GDRY
C008-SB006-024036-01	B9.10548G	K40	11/21/2019	2.360e+01			6.310e-02	2.560e+00	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Pb210	11/21/2019	4.240e-01	J		2.430e-01	1.800e-01	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Pb212	11/21/2019	8.750e-01	J		1.870e-02	9.730e-02	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Pb214	11/21/2019	4.460e-01	J		1.960e-02	5.220e-02	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Ra226	11/21/2019	8.030e-01	J		1.610e-01	1.520e-01	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Ra228	11/21/2019	7.540e-01			2.850e-02	8.510e-02	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Bi212	11/21/2019	8.400e-01	J		1.020e-01	1.300e-01	PCI/GDRY
C008-SB006-024036-01	B9.10548G	Th234	11/21/2019	5.450e-01	J		2.330e-01	1.830e-01	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB006-060072-01	B9.10549H	Th227	11/19/2019	8.490e-02			3.140e-02	4.490e-02	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Th228	11/19/2019	1.400e+00			2.020e-02	1.860e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Th232	11/19/2019	1.260e+00			2.260e-02	1.710e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Th230	11/19/2019	1.310e+00			5.870e-02	1.800e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB006-060072-01	B9.10549H	U234	11/20/2019	1.100e+00		U	2.600e-02	1.810e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	U238	11/20/2019	1.090e+00			3.200e-02	1.790e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	U235	11/20/2019	3.710e-02			3.510e-02	3.140e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB006-060072-01	B9.10549H	U235	11/21/2019	1.020e-01	J		6.250e-02	4.950e-02	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Ra226	11/21/2019	2.230e+00	J		2.100e-01	3.000e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Tl208	11/21/2019	3.960e-01	J		1.090e-02	4.470e-02	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Pb210	11/21/2019	6.180e-01	J		1.390e-01	1.260e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Bi212	11/21/2019	1.380e+00	J		1.200e-01	1.900e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Bi214	11/21/2019	1.200e+00	J		1.920e-02	1.320e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Th234	11/21/2019	8.630e-01	J		2.140e-01	1.910e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	K40	11/21/2019	1.410e+01			7.910e-02	1.530e+00	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Ra228	11/21/2019	1.270e+00			2.770e-02	1.420e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Pb212	11/21/2019	1.240e+00	J		1.390e-02	1.350e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Pb214	11/21/2019	1.370e+00	J		2.050e-02	1.580e-01	PCI/GDRY
C008-SB006-060072-01	B9.10549H	Cs137	11/21/2019	1.010e-02			7.500e-03	5.660e-03	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB007-024036-01	B9.10550A	Th227	11/19/2019	8.740e-02			1.470e-02	3.160e-02	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Th228	11/19/2019	8.820e-01			1.380e-02	1.110e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Th230	11/19/2019	2.070e+00			2.640e-02	2.310e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Th232	11/19/2019	8.500e-01			9.780e-03	1.080e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB007-024036-01	B9.10550A	U235	11/20/2019	4.000e-02			1.000e-02	1.940e-02	PCI/GDRY
C008-SB007-024036-01	B9.10550A	U238	11/20/2019	8.480e-01			1.160e-02	1.160e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	U234	11/20/2019	9.200e-01			1.030e-02	1.240e-01	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB007-024036-01	B9.10550A	Th234	11/22/2019	9.800e-01	J		2.480e-01	1.910e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Tl208	11/22/2019	2.640e-01	J		1.090e-02	3.060e-02	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Ra226	11/22/2019	7.390e+00	J		3.040e-01	8.640e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Bi212	11/22/2019	1.040e+00	J		1.780e-01	1.980e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	U235	11/22/2019	-4.230e-02			1.080e-01	7.600e-02	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Ra228	11/22/2019	9.390e-01			4.570e-02	1.090e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Pb214	11/22/2019	6.440e+00	J		3.720e-02	7.050e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Pb212	11/22/2019	9.890e-01	J		5.500e-02	1.140e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Pb210	11/22/2019	4.270e+00	J		2.390e-01	5.280e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	K40	11/22/2019	5.010e+00			1.470e-01	5.820e-01	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Cs137	11/22/2019	-6.920e-03			2.240e-02	1.360e-02	PCI/GDRY
C008-SB007-024036-01	B9.10550A	Bi214	11/22/2019	5.340e+00	J		2.940e-02	5.860e-01	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB007-060072-01	B9.10551B	Th232	11/19/2019	6.280e-01			2.010e-02	9.950e-02	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Th227	11/19/2019	4.810e-02			2.780e-02	3.210e-02	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Th230	11/19/2019	1.290e+00			5.510e-02	1.700e-01	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Th228	11/19/2019	7.330e-01			2.090e-02	1.100e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB007-060072-01	B9.10551B	U234	11/20/2019	5.910e-01			2.540e-02	1.080e-01	PCI/GDRY
C008-SB007-060072-01	B9.10551B	U235	11/20/2019	1.340e-02			2.790e-02	1.870e-02	PCI/GDRY
C008-SB007-060072-01	B9.10551B	U238	11/20/2019	5.670e-01			1.680e-02	1.050e-01	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB007-060072-01	B9.10551B	Ra226	11/21/2019	4.320e+00	J		2.990e-01	5.360e-01	PCI/GDRY
C008-SB007-060072-01	B9.10551B	U235	11/21/2019	-2.170e-02			1.090e-01	7.070e-02	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Tl208	11/21/2019	2.910e-01	J		1.790e-02	3.640e-02	PCI/GDRY
C008-SB007-060072-01	B9.10551B	K40	11/21/2019	1.210e+01			1.110e-01	1.340e+00	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Bi212	11/21/2019	1.050e+00	J		1.740e-01	1.960e-01	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Bi214	11/21/2019	2.970e+00	J		2.380e-02	3.270e-01	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Th234	11/21/2019	8.900e-01	J		2.930e-01	2.090e-01	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Cs137	11/21/2019	1.240e-02			9.570e-03	6.100e-03	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Ra228	11/21/2019	8.910e-01			5.480e-02	1.050e-01	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Pb210	11/21/2019	3.530e+00	J		3.560e-01	4.900e-01	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Pb212	11/21/2019	8.870e-01	J		2.060e-02	9.980e-02	PCI/GDRY
C008-SB007-060072-01	B9.10551B	Pb214	11/21/2019	3.410e+00	J		3.150e-02	3.760e-01	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB008-048060-01	B9.10552C	Th232	11/19/2019	5.380e-01			1.690e-02	9.390e-02	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Th230	11/19/2019	4.190e-01			6.490e-02	8.780e-02	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Th227	11/19/2019	2.760e-02			3.600e-02	2.830e-02	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Th228	11/19/2019	6.030e-01			2.660e-02	1.020e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB008-048060-01	B9.10552C	U238	11/20/2019	4.410e-01			2.550e-02	9.710e-02	PCI/GDRY
C008-SB008-048060-01	B9.10552C	U235	11/20/2019	4.450e-02			2.480e-02	3.220e-02	PCI/GDRY
C008-SB008-048060-01	B9.10552C	U234	11/20/2019	4.390e-01			2.870e-02	9.710e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB008-048060-01	B9.10552C	Pb210	11/22/2019	8.730e-01	J		2.130e-01	1.840e-01	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Ra226	11/22/2019	1.620e+00	J		1.940e-01	2.420e-01	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Bi212	11/22/2019	7.690e-01	J		1.270e-01	1.470e-01	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Bi214	11/22/2019	8.880e-01	J		1.890e-02	9.830e-02	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Cs137	11/22/2019	9.170e-03			6.890e-03	5.140e-03	PCI/GDRY
C008-SB008-048060-01	B9.10552C	K40	11/22/2019	1.390e+01			8.650e-02	1.510e+00	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Pb214	11/22/2019	1.020e+00	J		2.090e-02	1.130e-01	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Pb212	11/22/2019	7.710e-01	J		2.190e-02	8.680e-02	PCI/GDRY
C008-SB008-048060-01	B9.10552C	U235	11/22/2019	3.830e-02	J		6.570e-02	4.020e-02	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Ra228	11/22/2019	7.180e-01			3.990e-02	8.610e-02	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Th234	11/22/2019	3.630e-01	J		2.230e-01	1.660e-01	PCI/GDRY
C008-SB008-048060-01	B9.10552C	Tl208	11/22/2019	2.120e-01	J		1.010e-02	2.550e-02	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB008-084096-01	B9.10553D	Th232	11/19/2019	4.550e-01			7.310e-03	6.510e-02	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Th230	11/19/2019	7.090e-01			2.070e-02	9.340e-02	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Th228	11/19/2019	4.820e-01			9.670e-03	6.810e-02	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Th227	11/19/2019	3.560e-02			9.930e-03	1.800e-02	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB008-084096-01	B9.10553D	U238	11/20/2019	1.470e+00			7.140e-03	1.640e-01	PCI/GDRY
C008-SB008-084096-01	B9.10553D	U235	11/20/2019	7.760e-02			6.180e-03	2.300e-02	PCI/GDRY
C008-SB008-084096-01	B9.10553D	U234	11/20/2019	2.020e+00			7.140e-03	2.190e-01	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB008-084096-01	B9.10553D	Cs137	11/21/2019	1.270e-02			2.780e-02	1.690e-02	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Th234	11/21/2019	1.570e+00	J		4.490e-01	3.650e-01	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Bi212	11/21/2019	8.890e-01	J		3.530e-01	3.340e-01	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Bi214	11/21/2019	2.020e+00	J		5.670e-02	2.280e-01	PCI/GDRY
C008-SB008-084096-01	B9.10553D	K40	11/21/2019	4.320e+00			3.160e-01	5.720e-01	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Pb212	11/21/2019	5.250e-01	J		4.520e-02	6.870e-02	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Pb214	11/21/2019	2.550e+00	J		6.450e-02	2.840e-01	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Pb210	11/21/2019	2.760e+00	J		3.600e-01	4.100e-01	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Ra228	11/21/2019	5.410e-01			1.020e-01	1.050e-01	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Tl208	11/21/2019	2.030e-01	J		2.910e-02	3.580e-02	PCI/GDRY
C008-SB008-084096-01	B9.10553D	U235	11/21/2019	3.250e-02			1.240e-01	8.090e-02	PCI/GDRY
C008-SB008-084096-01	B9.10553D	Ra226	11/21/2019	4.570e+00	J		5.980e-01	7.110e-01	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB009-000012-01	B9.10554E	Th227	11/19/2019	2.730e-02			2.740e-02	2.720e-02	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Th228	11/19/2019	9.130e-01			2.360e-02	1.370e-01	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Th230	11/19/2019	7.440e-01			6.490e-02	1.250e-01	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Th232	11/19/2019	8.290e-01			2.430e-02	1.290e-01	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB009-000012-01	B9.10554E	U234	11/20/2019	4.560e-01			2.350e-02	9.560e-02	PCI/GDRY
C008-SB009-000012-01	B9.10554E	U235	11/20/2019	6.840e-02			2.290e-02	3.810e-02	PCI/GDRY
C008-SB009-000012-01	B9.10554E	U238	11/20/2019	5.400e-01			2.350e-02	1.060e-01	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB009-000012-01	B9.10554E	Pb212	11/25/2019	9.340e-01	J		2.470e-02	1.050e-01	PCI/GDRY
C008-SB009-000012-01	B9.10554E	U235	11/25/2019	3.550e-02	J		7.070e-02	4.310e-02	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Bi212	11/25/2019	1.040e+00	J		1.490e-01	1.890e-01	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Bi214	11/25/2019	9.810e-01	J		2.020e-02	1.090e-01	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Cs137	11/25/2019	3.040e-02			8.820e-03	8.020e-03	PCI/GDRY
C008-SB009-000012-01	B9.10554E	K40	11/25/2019	1.420e+01			8.970e-02	1.550e+00	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Pb210	11/25/2019	1.060e+00	J		2.560e-01	2.320e-01	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Pb214	11/25/2019	1.110e+00	J		2.660e-02	1.240e-01	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Ra228	11/25/2019	8.170e-01			3.830e-02	9.430e-02	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Th234	11/25/2019	6.650e-01	J		2.390e-01	1.870e-01	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Tl208	11/25/2019	2.580e-01	J		1.090e-02	3.040e-02	PCI/GDRY
C008-SB009-000012-01	B9.10554E	Ra226	11/25/2019	1.930e+00	J		2.300e-01	2.930e-01	PCI/GDRY

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Analytical Method NAREL ACT-02F-TH

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB009-072084-01	B9.10555F	Th232	11/19/2019	4.630e-01			1.880e-02	7.830e-02	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Th230	11/19/2019	7.690e-01			5.760e-02	1.140e-01	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Th227	11/19/2019	1.960e-02			2.590e-02	2.110e-02	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Th228	11/19/2019	4.470e-01			1.940e-02	7.650e-02	PCI/GDRY

Analytical Method NAREL ACT-02F-U

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB009-072084-01	B9.10555F	U235	11/20/2019	2.790e-02			3.060e-02	2.580e-02	PCI/GDRY
C008-SB009-072084-01	B9.10555F	U234	11/20/2019	4.520e-01			1.850e-02	9.390e-02	PCI/GDRY
C008-SB009-072084-01	B9.10555F	U238	11/20/2019	4.270e-01			1.850e-02	9.060e-02	PCI/GDRY

Analytical Method NAREL GAM-01-RA

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
C008-SB009-072084-01	B9.10555F	Pb212	11/25/2019	8.090e-01	J		1.930e-02	9.030e-02	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Tl208	11/25/2019	2.130e-01	J		8.420e-03	2.480e-02	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Th234	11/25/2019	4.710e-01	J		2.230e-01	1.700e-01	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Ra228	11/25/2019	6.920e-01			2.860e-02	7.840e-02	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Bi212	11/25/2019	8.030e-01	J		1.030e-01	1.320e-01	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Pb214	11/25/2019	7.470e-01	J		1.910e-02	8.340e-02	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Pb210	11/25/2019	7.760e-01	J		2.410e-01	2.010e-01	PCI/GDRY
C008-SB009-072084-01	B9.10555F	K40	11/25/2019	1.320e+01			7.170e-02	1.430e+00	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Cs137	11/25/2019	-3.690e-03			9.040e-03	5.490e-03	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Bi214	11/25/2019	6.280e-01	J		1.700e-02	7.050e-02	PCI/GDRY
C008-SB009-072084-01	B9.10555F	U235	11/25/2019	2.580e-03			6.020e-02	3.630e-02	PCI/GDRY
C008-SB009-072084-01	B9.10555F	Ra226	11/25/2019	1.270e+00	J		1.700e-01	1.990e-01	PCI/GDRY

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Analytical Method NAREL GAM-01

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
RB-190908	B9.10556G	Bi214	12/4/2019	1.530e+00	J		2.360e+00	2.000e+00	PCI/L
RB-190908	B9.10556G	Cs137	12/4/2019	1.690e-01			1.040e+00	7.930e-01	PCI/L
RB-190908	B9.10556G	Bi212	12/4/2019	1.690e+00			1.370e+01	1.040e+01	PCI/L
RB-190908	B9.10556G	U235	12/4/2019	-2.540e+00			9.420e+00	5.700e+00	PCI/L
RB-190908	B9.10556G	Tl208	12/4/2019	2.070e-01			1.050e+00	7.770e-01	PCI/L
RB-190908	B9.10556G	K40	12/4/2019	-1.050e+00			1.080e+01	9.760e+00	PCI/L
RB-190908	B9.10556G	Pb210	12/4/2019	-4.110e-01			2.250e+01	1.510e+01	PCI/L
RB-190908	B9.10556G	Pb212	12/4/2019	-2.520e-01			1.850e+00	1.290e+00	PCI/L
RB-190908	B9.10556G	Pb214	12/4/2019	-5.590e-01			2.380e+00	1.930e+00	PCI/L
RB-190908	B9.10556G	Th234	12/4/2019	8.470e+00			3.000e+01	1.820e+01	PCI/L
RB-190908	B9.10556G	Ra228	12/4/2019	1.870e+00			3.580e+00	2.850e+00	PCI/L
RB-190908	B9.10556G	Ra226	12/4/2019	1.350e+01	J		2.020e+01	1.430e+01	PCI/L

Analytical Method NAREL TH-EICHROM

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
RB-190908	B9.10556G	Th232	10/17/2019	2.130e-02			9.980e-02	5.410e-02	PCI/L
RB-190908	B9.10556G	Th227	10/17/2019	0.000e+00			1.340e-01	5.620e-02	PCI/L
RB-190908	B9.10556G	Th230	10/17/2019	-8.560e-02			3.220e-01	1.510e-01	PCI/L
RB-190908	B9.10556G	Th228	10/17/2019	1.430e-02			1.150e-01	5.590e-02	PCI/L

Analytical Method NAREL U-EICHROM

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
RB-190908	B9.10556G	U234	10/21/2019	1.360e-01			7.590e-02	9.700e-02	PCI/L
RB-190908	B9.10556G	U235	10/21/2019	0.000e+00			9.090e-02	3.820e-02	PCI/L
RB-190908	B9.10556G	U238	10/21/2019	6.560e-02			1.050e-01	7.640e-02	PCI/L

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Analytical Method NAREL GAM-01

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
RB-190909	B9.10557H	Cs137	12/4/2019	-5.540e-02			1.000e+00	5.940e-01	PCI/L
RB-190909	B9.10557H	Ra226	12/4/2019	-4.560e+00			2.290e+01	2.340e+01	PCI/L
RB-190909	B9.10557H	Bi212	12/4/2019	3.520e+00			1.110e+01	6.650e+00	PCI/L
RB-190909	B9.10557H	Bi214	12/4/2019	5.220e-01			2.150e+00	1.610e+00	PCI/L
RB-190909	B9.10557H	K40	12/4/2019	3.830e+00			9.480e+00	5.730e+00	PCI/L
RB-190909	B9.10557H	Pb210	12/4/2019	-1.460e+00			2.340e+01	1.720e+01	PCI/L
RB-190909	B9.10557H	Pb214	12/4/2019	1.010e+00			2.420e+00	1.470e+00	PCI/L
RB-190909	B9.10557H	Ra228	12/4/2019	-1.710e+00			3.910e+00	1.090e+01	PCI/L
RB-190909	B9.10557H	Th234	12/4/2019	8.310e+00			2.790e+01	1.690e+01	PCI/L
RB-190909	B9.10557H	Tl208	12/4/2019	3.870e-01			1.040e+00	6.260e-01	PCI/L
RB-190909	B9.10557H	U235	12/4/2019	7.190e-01			7.250e+00	4.360e+00	PCI/L
RB-190909	B9.10557H	Pb212	12/4/2019	2.230e-01			2.060e+00	1.220e+00	PCI/L

Analytical Method NAREL TH-EICHROM

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
RB-190909	B9.10557H	Th227	10/17/2019	0.000e+00			1.380e-01	5.820e-02	PCI/L
RB-190909	B9.10557H	Th228	10/17/2019	7.200e-02			1.270e-01	8.590e-02	PCI/L
RB-190909	B9.10557H	Th230	10/17/2019	-1.600e-02			3.240e-01	1.640e-01	PCI/L
RB-190909	B9.10557H	Th232	10/17/2019	1.170e-02			8.920e-02	4.530e-02	PCI/L

Analytical Method NAREL U-EICHROM

Sample ID	Lab Sample ID	Chemical Name	Anal Date	Result	Lab Qual	Val Qual	MDC	2*CSU	Units
RB-190909	B9.10557H	U238	10/21/2019	3.860e-02			8.920e-02	5.960e-02	PCI/L
RB-190909	B9.10557H	U234	10/21/2019	1.930e-02			1.000e-01	5.290e-02	PCI/L
RB-190909	B9.10557H	U235	10/21/2019	3.470e-02			1.310e-01	7.330e-02	PCI/L

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10537D	Amount analyzed:	5.972e+02 GDRY
Client sample ID:	C008-SB001-036048-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 14:10 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	94.64 %	Analyst:	JEA
Ash/dry weight:	95.64 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 14:08	1000.0	GE15	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	8.41e-01	1.6e-01	6.6e-02	1.3e-01	PCI/GDRY	09/08/2019 14:10 EDT
Bi214	J	1.66e+00	1.8e-01	1.0e-02	2.0e-02	PCI/GDRY	09/08/2019 14:10 EDT
Cs137		1.82e-02	5.2e-03	3.7e-03	7.4e-03	PCI/GDRY	09/08/2019 14:10 EDT
K40		1.71e+01	1.9e+00	3.8e-02	7.7e-02	PCI/GDRY	09/08/2019 14:10 EDT
Pb210	J	1.91e+00	3.2e-01	1.5e-01	3.0e-01	PCI/GDRY	09/08/2019 14:10 EDT
Pb212	J	9.53e-01	1.1e-01	1.1e-02	2.2e-02	PCI/GDRY	09/08/2019 14:10 EDT
Pb214	J	1.94e+00	2.1e-01	1.2e-02	2.5e-02	PCI/GDRY	09/08/2019 14:10 EDT
Ra226	J	2.44e+00	3.1e-01	1.0e-01	2.1e-01	PCI/GDRY	09/08/2019 14:10 EDT
Ra228		6.83e-01	7.9e-02	1.8e-02	3.7e-02	PCI/GDRY	09/08/2019 14:10 EDT
Th234	J	4.91e-01	2.1e-01	1.4e-01	2.8e-01	PCI/GDRY	09/08/2019 14:10 EDT
Tl208	J	2.22e-01	2.7e-02	5.4e-03	1.1e-02	PCI/GDRY	09/08/2019 14:10 EDT
U235		2.15e-02	4.6e-02	3.8e-02	7.6e-02	PCI/GDRY	09/08/2019 14:10 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10538E	Amount analyzed:	6.046e+02 GDRY
Client sample ID:	C008-SB001-036048-02	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 14:10 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	93.01 %	Analyst:	JEA
Ash/dry weight:	95.21 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 14:11	1000.0	GE18	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	8.46e-01	1.4e-01	6.9e-02	1.4e-01	PCI/GDRY	09/08/2019 14:10 EDT
Bi214	J	2.09e+00	2.3e-01	1.1e-02	2.2e-02	PCI/GDRY	09/08/2019 14:10 EDT
Cs137		2.08e-02	8.8e-03	5.2e-03	1.1e-02	PCI/GDRY	09/08/2019 14:10 EDT
K40		1.72e+01	1.9e+00	5.0e-02	1.0e-01	PCI/GDRY	09/08/2019 14:10 EDT
Pb210	J	2.00e+00	3.1e-01	1.5e-01	3.0e-01	PCI/GDRY	09/08/2019 14:10 EDT
Pb212	J	7.19e-01	8.0e-02	1.1e-02	2.3e-02	PCI/GDRY	09/08/2019 14:10 EDT
Pb214	J	2.40e+00	2.6e-01	1.5e-02	3.1e-02	PCI/GDRY	09/08/2019 14:10 EDT
Ra226	J	3.03e+00	3.9e-01	1.3e-01	2.7e-01	PCI/GDRY	09/08/2019 14:10 EDT
Ra228		7.87e-01	9.4e-02	3.0e-02	6.0e-02	PCI/GDRY	09/08/2019 14:10 EDT
Th234	J	5.32e-01	1.9e-01	1.4e-01	2.8e-01	PCI/GDRY	09/08/2019 14:10 EDT
Tl208	J	2.70e-01	3.2e-02	7.4e-03	1.5e-02	PCI/GDRY	09/08/2019 14:10 EDT
U235	J	4.93e-02	5.6e-02	4.5e-02	9.1e-02	PCI/GDRY	09/08/2019 14:10 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10539F	Amount analyzed:	2.248e+02 GDRY
Client sample ID:	C008-SB001-108120-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 14:15 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	59.03 %	Analyst:	JEA
Ash/dry weight:	91.71 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 14:09	1000.0	GE16	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	1.01e+00	1.6e-01	6.1e-02	1.2e-01	PCI/GDRY	09/08/2019 14:15 EDT
Bi214	J	5.98e-01	7.0e-02	1.3e-02	2.5e-02	PCI/GDRY	09/08/2019 14:15 EDT
Cs137		-5.25e-03	7.4e-03	6.0e-03	1.2e-02	PCI/GDRY	09/08/2019 14:15 EDT
K40		1.12e+01	1.2e+00	4.4e-02	9.1e-02	PCI/GDRY	09/08/2019 14:15 EDT
Pb210	J	5.50e-01	1.3e-01	8.0e-02	1.6e-01	PCI/GDRY	09/08/2019 14:15 EDT
Pb212	J	9.74e-01	1.1e-01	1.2e-02	2.5e-02	PCI/GDRY	09/08/2019 14:15 EDT
Pb214	J	7.16e-01	8.2e-02	1.2e-02	2.5e-02	PCI/GDRY	09/08/2019 14:15 EDT
Ra226	J	1.48e+00	2.3e-01	9.8e-02	2.0e-01	PCI/GDRY	09/08/2019 14:15 EDT
Ra228		8.55e-01	9.9e-02	1.8e-02	3.8e-02	PCI/GDRY	09/08/2019 14:15 EDT
Th234	J	7.53e-01	1.7e-01	1.0e-01	2.0e-01	PCI/GDRY	09/08/2019 14:15 EDT
Tl208	J	2.61e-01	3.2e-02	6.6e-03	1.3e-02	PCI/GDRY	09/08/2019 14:15 EDT
U235	J	9.33e-02	5.0e-02	3.2e-02	6.4e-02	PCI/GDRY	09/08/2019 14:15 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10540Y	Amount analyzed:	5.759e+02 GDRY
Client sample ID:	C008-SB002-024036-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 15:25 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	88.87 %	Analyst:	JEA
Ash/dry weight:	86.80 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 09:59	1000.0	GE18	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	1.05e+00	1.9e-01	8.9e-02	1.8e-01	PCI/GDRY	09/08/2019 15:25 EDT
Bi214	J	4.24e+00	4.6e-01	1.3e-02	2.7e-02	PCI/GDRY	09/08/2019 15:25 EDT
Cs137		9.29e-02	1.4e-02	5.9e-03	1.2e-02	PCI/GDRY	09/08/2019 15:25 EDT
K40		1.24e+01	1.4e+00	6.4e-02	1.3e-01	PCI/GDRY	09/08/2019 15:25 EDT
Pb210	J	4.52e+00	6.0e-01	1.9e-01	3.9e-01	PCI/GDRY	09/08/2019 15:25 EDT
Pb212	J	8.99e-01	1.0e-01	1.6e-02	3.2e-02	PCI/GDRY	09/08/2019 15:25 EDT
Pb214	J	4.83e+00	5.2e-01	1.3e-02	2.6e-02	PCI/GDRY	09/08/2019 15:25 EDT
Ra226	J	5.86e+00	6.9e-01	1.7e-01	3.4e-01	PCI/GDRY	09/08/2019 15:25 EDT
Ra228		9.70e-01	1.2e-01	3.2e-02	6.5e-02	PCI/GDRY	09/08/2019 15:25 EDT
Th234	J	9.77e-01	2.8e-01	1.9e-01	3.9e-01	PCI/GDRY	09/08/2019 15:25 EDT
Tl208	J	3.28e-01	3.9e-02	9.2e-03	1.8e-02	PCI/GDRY	09/08/2019 15:25 EDT
U235	J	8.51e-02	7.1e-02	5.7e-02	1.2e-01	PCI/GDRY	09/08/2019 15:25 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10541Z	Amount analyzed:	5.262e+02 GDRY
Client sample ID:	C008-SB002-060072-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 15:30 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	84.06 %	Analyst:	JEA
Ash/dry weight:	90.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/25/2019 13:24	1000.0	GE18	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	8.45e-01	1.7e-01	7.7e-02	1.6e-01	PCI/GDRY	09/08/2019 15:30 EDT
Bi214	J	1.87e+00	2.1e-01	1.2e-02	2.4e-02	PCI/GDRY	09/08/2019 15:30 EDT
Cs137		2.86e-02	1.0e-02	7.7e-03	1.6e-02	PCI/GDRY	09/08/2019 15:30 EDT
K40		1.05e+01	1.2e+00	5.6e-02	1.1e-01	PCI/GDRY	09/08/2019 15:30 EDT
Pb210	J	2.30e+00	3.6e-01	1.6e-01	3.3e-01	PCI/GDRY	09/08/2019 15:30 EDT
Pb212	J	7.46e-01	8.4e-02	9.2e-03	1.9e-02	PCI/GDRY	09/08/2019 15:30 EDT
Pb214	J	2.15e+00	2.4e-01	1.5e-02	3.0e-02	PCI/GDRY	09/08/2019 15:30 EDT
Ra226	J	2.63e+00	3.6e-01	1.3e-01	2.6e-01	PCI/GDRY	09/08/2019 15:30 EDT
Ra228		7.78e-01	9.3e-02	2.7e-02	5.4e-02	PCI/GDRY	09/08/2019 15:30 EDT
Th234	J	7.31e-01	2.3e-01	1.6e-01	3.2e-01	PCI/GDRY	09/08/2019 15:30 EDT
Tl208	J	2.29e-01	2.7e-02	6.1e-03	1.2e-02	PCI/GDRY	09/08/2019 15:30 EDT
U235		-2.73e-02	5.5e-02	4.2e-02	8.4e-02	PCI/GDRY	09/08/2019 15:30 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10542A	Amount analyzed:	3.138e+02 GDRY
Client sample ID:	C008-SB003-000012-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 16:15 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	91.27 %	Analyst:	JEA
Ash/dry weight:	96.18 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 09:41	1000.0	GE16	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	9.08e-01	1.7e-01	7.1e-02	1.4e-01	PCI/GDRY	09/08/2019 16:15 EDT
Bi214	J	9.32e-01	1.0e-01	1.1e-02	2.2e-02	PCI/GDRY	09/08/2019 16:15 EDT
Cs137		2.76e-02	7.1e-03	4.0e-03	8.2e-03	PCI/GDRY	09/08/2019 16:15 EDT
K40		1.52e+01	1.7e+00	4.3e-02	8.8e-02	PCI/GDRY	09/08/2019 16:15 EDT
Pb210	J	1.03e+00	2.4e-01	1.3e-01	2.7e-01	PCI/GDRY	09/08/2019 16:15 EDT
Pb212	J	8.87e-01	1.0e-01	1.3e-02	2.5e-02	PCI/GDRY	09/08/2019 16:15 EDT
Pb214	J	1.07e+00	1.2e-01	1.3e-02	2.6e-02	PCI/GDRY	09/08/2019 16:15 EDT
Ra226	J	1.84e+00	2.7e-01	1.0e-01	2.1e-01	PCI/GDRY	09/08/2019 16:15 EDT
Ra228		8.00e-01	9.5e-02	1.8e-02	3.7e-02	PCI/GDRY	09/08/2019 16:15 EDT
Th234	J	5.73e-01	2.2e-01	1.4e-01	2.7e-01	PCI/GDRY	09/08/2019 16:15 EDT
Tl208	J	2.38e-01	2.8e-02	5.0e-03	1.0e-02	PCI/GDRY	09/08/2019 16:15 EDT
U235		5.06e-03	3.5e-02	2.8e-02	5.7e-02	PCI/GDRY	09/08/2019 16:15 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10543B	Amount analyzed:	4.652e+02 GDRY
Client sample ID:	C008-SB003-072084-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 16:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	81.19 %	Analyst:	JEA
Ash/dry weight:	73.08 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/21/2019 09:56	1000.0	GE16	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	2.34e+00	3.0e-01	7.9e-02	1.6e-01	PCI/GDRY	09/08/2019 16:20 EDT
Bi214	J	1.71e+00	1.9e-01	1.0e-02	2.1e-02	PCI/GDRY	09/08/2019 16:20 EDT
Cs137		-6.30e-03	1.0e-02	8.5e-03	1.7e-02	PCI/GDRY	09/08/2019 16:20 EDT
K40		1.10e+01	1.2e+00	5.0e-02	1.0e-01	PCI/GDRY	09/08/2019 16:20 EDT
Pb210	J	1.17e+00	2.0e-01	9.4e-02	1.9e-01	PCI/GDRY	09/08/2019 16:20 EDT
Pb212	J	2.22e+00	2.4e-01	8.9e-03	1.8e-02	PCI/GDRY	09/08/2019 16:20 EDT
Pb214	J	1.92e+00	2.3e-01	1.5e-02	3.1e-02	PCI/GDRY	09/08/2019 16:20 EDT
Ra226	J	3.51e+00	4.6e-01	1.5e-01	2.9e-01	PCI/GDRY	09/08/2019 16:20 EDT
Ra228		2.29e+00	2.5e-01	1.9e-02	3.9e-02	PCI/GDRY	09/08/2019 16:20 EDT
Th234	J	1.74e+00	2.5e-01	1.2e-01	2.4e-01	PCI/GDRY	09/08/2019 16:20 EDT
Tl208	J	7.22e-01	8.1e-02	6.8e-03	1.4e-02	PCI/GDRY	09/08/2019 16:20 EDT
U235	J	1.87e-01	6.6e-02	4.1e-02	8.3e-02	PCI/GDRY	09/08/2019 16:20 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10544C	Amount analyzed:	6.454e+02 GDRY
Client sample ID:	C008-SB004-012024-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 16:50 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	89.22 %	Analyst:	JEA
Ash/dry weight:	97.28 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/22/2019 11:14	1000.0	GE15	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	7.90e-01	1.3e-01	5.2e-02	1.1e-01	PCI/GDRY	09/08/2019 16:50 EDT
Bi214	J	5.85e-01	6.6e-02	8.3e-03	1.7e-02	PCI/GDRY	09/08/2019 16:50 EDT
Cs137		2.87e-02	6.5e-03	4.4e-03	8.8e-03	PCI/GDRY	09/08/2019 16:50 EDT
K40		1.28e+01	1.4e+00	3.0e-02	6.2e-02	PCI/GDRY	09/08/2019 16:50 EDT
Pb210	J	6.76e-01	1.8e-01	1.1e-01	2.2e-01	PCI/GDRY	09/08/2019 16:50 EDT
Pb212	J	8.58e-01	9.5e-02	9.1e-03	1.8e-02	PCI/GDRY	09/08/2019 16:50 EDT
Pb214	J	6.87e-01	7.7e-02	9.1e-03	1.8e-02	PCI/GDRY	09/08/2019 16:50 EDT
Ra226	J	1.18e+00	1.8e-01	8.1e-02	1.6e-01	PCI/GDRY	09/08/2019 16:50 EDT
Ra228		7.27e-01	8.2e-02	1.4e-02	2.9e-02	PCI/GDRY	09/08/2019 16:50 EDT
Th234	J	6.46e-01	1.9e-01	1.1e-01	2.3e-01	PCI/GDRY	09/08/2019 16:50 EDT
Tl208	J	2.27e-01	2.6e-02	3.6e-03	7.3e-03	PCI/GDRY	09/08/2019 16:50 EDT
U235		1.81e-02	3.6e-02	2.9e-02	5.9e-02	PCI/GDRY	09/08/2019 16:50 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10545D	Amount analyzed:	1.533e+02 GDRY
Client sample ID:	C008-SB004-084096-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 16:55 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	48.26 %	Analyst:	JEA
Ash/dry weight:	78.67 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 10:01	1000.0	GE24	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	2.45e+00	3.5e-01	1.1e-01	2.2e-01	PCI/GDRY	09/08/2019 16:55 EDT
Bi214	J	1.60e+00	1.8e-01	1.4e-02	2.8e-02	PCI/GDRY	09/08/2019 16:55 EDT
Cs137		-8.76e-03	1.2e-02	9.4e-03	1.9e-02	PCI/GDRY	09/08/2019 16:55 EDT
K40		9.98e+00	1.1e+00	8.6e-02	1.8e-01	PCI/GDRY	09/08/2019 16:55 EDT
Pb210	J	1.46e+00	2.4e-01	1.1e-01	2.2e-01	PCI/GDRY	09/08/2019 16:55 EDT
Pb212	J	2.25e+00	2.4e-01	1.1e-02	2.3e-02	PCI/GDRY	09/08/2019 16:55 EDT
Pb214	J	1.98e+00	2.2e-01	1.8e-02	3.6e-02	PCI/GDRY	09/08/2019 16:55 EDT
Ra226	J	3.90e+00	5.1e-01	1.5e-01	3.1e-01	PCI/GDRY	09/08/2019 16:55 EDT
Ra228		2.17e+00	2.4e-01	2.7e-02	5.4e-02	PCI/GDRY	09/08/2019 16:55 EDT
Th228		5.45e+00	2.8e+00	1.9e+00	3.8e+00	PCI/GDRY	09/08/2019 16:55 EDT
Th234	J	1.91e+00	2.7e-01	1.3e-01	2.6e-01	PCI/GDRY	09/08/2019 16:55 EDT
Tl208	J	6.69e-01	7.5e-02	8.4e-03	1.7e-02	PCI/GDRY	09/08/2019 16:55 EDT
U235	J	1.59e-01	6.0e-02	4.1e-02	8.3e-02	PCI/GDRY	09/08/2019 16:55 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10546E	Amount analyzed:	6.346e+02 GDRY
Client sample ID:	C008-SB005-036048-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 17:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	90.31 %	Analyst:	JEA
Ash/dry weight:	88.79 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/22/2019 11:22	1000.0	GE18	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	9.80e-01	1.9e-01	9.2e-02	1.9e-01	PCI/GDRY	09/08/2019 17:35 EDT
Bi214	J	4.54e+00	4.9e-01	1.3e-02	2.6e-02	PCI/GDRY	09/08/2019 17:35 EDT
Cs137		5.48e-02	1.2e-02	5.9e-03	1.2e-02	PCI/GDRY	09/08/2019 17:35 EDT
K40		1.31e+01	1.4e+00	6.1e-02	1.2e-01	PCI/GDRY	09/08/2019 17:35 EDT
Pb210	J	4.81e+00	6.2e-01	1.9e-01	3.8e-01	PCI/GDRY	09/08/2019 17:35 EDT
Pb212	J	7.97e-01	9.0e-02	1.5e-02	3.1e-02	PCI/GDRY	09/08/2019 17:35 EDT
Pb214	J	5.23e+00	5.7e-01	1.7e-02	3.5e-02	PCI/GDRY	09/08/2019 17:35 EDT
Ra226	J	5.88e+00	6.9e-01	1.6e-01	3.1e-01	PCI/GDRY	09/08/2019 17:35 EDT
Ra228		8.50e-01	9.9e-02	2.9e-02	5.8e-02	PCI/GDRY	09/08/2019 17:35 EDT
Th234	J	7.42e-01	2.5e-01	1.8e-01	3.6e-01	PCI/GDRY	09/08/2019 17:35 EDT
Tl208	J	2.82e-01	3.2e-02	6.5e-03	1.3e-02	PCI/GDRY	09/08/2019 17:35 EDT
U235	J	7.73e-02	6.7e-02	5.5e-02	1.1e-01	PCI/GDRY	09/08/2019 17:35 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10547F	Amount analyzed:	5.825e+02 GDRY
Client sample ID:	C008-SB005-060072-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 17:40 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	81.14 %	Analyst:	JEA
Ash/dry weight:	90.29 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/22/2019 11:24	1000.0	GE23	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	1.08e+00	1.6e-01	6.0e-02	1.2e-01	PCI/GDRY	09/08/2019 17:40 EDT
Bi214	J	1.81e+00	2.0e-01	1.1e-02	2.2e-02	PCI/GDRY	09/08/2019 17:40 EDT
Cs137		1.64e-02	7.3e-03	4.5e-03	9.2e-03	PCI/GDRY	09/08/2019 17:40 EDT
K40		1.42e+01	1.5e+00	4.9e-02	1.0e-01	PCI/GDRY	09/08/2019 17:40 EDT
Pb210	J	2.03e+00	3.4e-01	1.7e-01	3.5e-01	PCI/GDRY	09/08/2019 17:40 EDT
Pb212	J	9.27e-01	1.0e-01	1.2e-02	2.4e-02	PCI/GDRY	09/08/2019 17:40 EDT
Pb214	J	2.06e+00	2.2e-01	1.3e-02	2.6e-02	PCI/GDRY	09/08/2019 17:40 EDT
Ra226	J	2.81e+00	3.7e-01	1.3e-01	2.6e-01	PCI/GDRY	09/08/2019 17:40 EDT
Ra228		1.01e+00	1.2e-01	2.3e-02	4.6e-02	PCI/GDRY	09/08/2019 17:40 EDT
Th234	J	9.76e-01	2.6e-01	1.7e-01	3.4e-01	PCI/GDRY	09/08/2019 17:40 EDT
Tl208	J	3.21e-01	3.7e-02	5.6e-03	1.1e-02	PCI/GDRY	09/08/2019 17:40 EDT
U235	J	7.73e-02	4.8e-02	3.5e-02	7.0e-02	PCI/GDRY	09/08/2019 17:40 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10548G	Amount analyzed:	6.162e+02 GDRY
Client sample ID:	C008-SB006-024036-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-08 18:15 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	95.38 %	Analyst:	JEA
Ash/dry weight:	98.58 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/21/2019 09:57	1000.0	GE15	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	8.40e-01	1.3e-01	5.0e-02	1.0e-01	PCI/GDRY	09/08/2019 18:15 EDT
Bi214	J	3.71e-01	4.4e-02	8.6e-03	1.7e-02	PCI/GDRY	09/08/2019 18:15 EDT
Cs137		3.78e-03	5.9e-03	4.8e-03	9.7e-03	PCI/GDRY	09/08/2019 18:15 EDT
K40		2.36e+01	2.6e+00	3.1e-02	6.3e-02	PCI/GDRY	09/08/2019 18:15 EDT
Pb210	J	4.24e-01	1.8e-01	1.2e-01	2.4e-01	PCI/GDRY	09/08/2019 18:15 EDT
Pb212	J	8.75e-01	9.7e-02	9.3e-03	1.9e-02	PCI/GDRY	09/08/2019 18:15 EDT
Pb214	J	4.46e-01	5.2e-02	9.7e-03	2.0e-02	PCI/GDRY	09/08/2019 18:15 EDT
Ra226	J	8.03e-01	1.5e-01	8.0e-02	1.6e-01	PCI/GDRY	09/08/2019 18:15 EDT
Ra228		7.54e-01	8.5e-02	1.4e-02	2.8e-02	PCI/GDRY	09/08/2019 18:15 EDT
Th234	J	5.45e-01	1.8e-01	1.2e-01	2.3e-01	PCI/GDRY	09/08/2019 18:15 EDT
Tl208	J	2.37e-01	2.7e-02	4.3e-03	8.7e-03	PCI/GDRY	09/08/2019 18:15 EDT
U235		1.49e-02	3.7e-02	3.0e-02	6.1e-02	PCI/GDRY	09/08/2019 18:15 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10549H	Amount analyzed:	4.842e+02 GDRY
Client sample ID:	C008-SB006-060072-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-09 18:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	79.29 %	Analyst:	JEA
Ash/dry weight:	86.11 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/21/2019 09:51	1000.0	GE24	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	1.38e+00	1.9e-01	5.9e-02	1.2e-01	PCI/GDRY	09/09/2019 18:20 EDT
Bi214	J	1.20e+00	1.3e-01	9.5e-03	1.9e-02	PCI/GDRY	09/09/2019 18:20 EDT
Cs137		1.01e-02	5.7e-03	3.7e-03	7.5e-03	PCI/GDRY	09/09/2019 18:20 EDT
K40		1.41e+01	1.5e+00	3.9e-02	7.9e-02	PCI/GDRY	09/09/2019 18:20 EDT
Pb210	J	6.18e-01	1.3e-01	6.9e-02	1.4e-01	PCI/GDRY	09/09/2019 18:20 EDT
Pb212	J	1.24e+00	1.3e-01	6.9e-03	1.4e-02	PCI/GDRY	09/09/2019 18:20 EDT
Pb214	J	1.37e+00	1.6e-01	1.0e-02	2.1e-02	PCI/GDRY	09/09/2019 18:20 EDT
Ra226	J	2.23e+00	3.0e-01	1.0e-01	2.1e-01	PCI/GDRY	09/09/2019 18:20 EDT
Ra228		1.27e+00	1.4e-01	1.4e-02	2.8e-02	PCI/GDRY	09/09/2019 18:20 EDT
Th234	J	8.63e-01	1.9e-01	1.1e-01	2.1e-01	PCI/GDRY	09/09/2019 18:20 EDT
Tl208	J	3.96e-01	4.5e-02	5.4e-03	1.1e-02	PCI/GDRY	09/09/2019 18:20 EDT
U235	J	1.02e-01	5.0e-02	3.1e-02	6.3e-02	PCI/GDRY	09/09/2019 18:20 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10550A	Amount analyzed:	2.411e+02 GDRY
Client sample ID:	C008-SB007-024036-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-09 08:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	85.05 %	Analyst:	JEA
Ash/dry weight:	37.87 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/22/2019 11:26	1000.0	GE24	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	1.04e+00	2.0e-01	8.8e-02	1.8e-01	PCI/GDRY	09/09/2019 08:20 EDT
Bi214	J	5.34e+00	5.9e-01	1.5e-02	2.9e-02	PCI/GDRY	09/09/2019 08:20 EDT
Cs137		-6.92e-03	1.4e-02	1.1e-02	2.2e-02	PCI/GDRY	09/09/2019 08:20 EDT
K40		5.01e+00	5.8e-01	7.2e-02	1.5e-01	PCI/GDRY	09/09/2019 08:20 EDT
Pb210	J	4.27e+00	5.3e-01	1.2e-01	2.4e-01	PCI/GDRY	09/09/2019 08:20 EDT
Pb212	J	9.89e-01	1.1e-01	2.7e-02	5.5e-02	PCI/GDRY	09/09/2019 08:20 EDT
Pb214	J	6.44e+00	7.1e-01	1.8e-02	3.7e-02	PCI/GDRY	09/09/2019 08:20 EDT
Ra226	J	7.39e+00	8.6e-01	1.5e-01	3.0e-01	PCI/GDRY	09/09/2019 08:20 EDT
Ra228		9.39e-01	1.1e-01	2.3e-02	4.6e-02	PCI/GDRY	09/09/2019 08:20 EDT
Th234	J	9.80e-01	1.9e-01	1.2e-01	2.5e-01	PCI/GDRY	09/09/2019 08:20 EDT
Tl208	J	2.64e-01	3.1e-02	5.4e-03	1.1e-02	PCI/GDRY	09/09/2019 08:20 EDT
U235		-4.23e-02	7.6e-02	5.4e-02	1.1e-01	PCI/GDRY	09/09/2019 08:20 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10551B	Amount analyzed:	5.681e+02 GDRY
Client sample ID:	C008-SB007-060072-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-09 08:25 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	85.12 %	Analyst:	JEA
Ash/dry weight:	88.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/21/2019 09:54	1000.0	GE18	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	1.05e+00	2.0e-01	8.6e-02	1.7e-01	PCI/GDRY	09/09/2019 08:25 EDT
Bi214	J	2.97e+00	3.3e-01	1.2e-02	2.4e-02	PCI/GDRY	09/09/2019 08:25 EDT
Cs137		1.24e-02	6.1e-03	4.7e-03	9.6e-03	PCI/GDRY	09/09/2019 08:25 EDT
K40		1.21e+01	1.3e+00	5.5e-02	1.1e-01	PCI/GDRY	09/09/2019 08:25 EDT
Pb210	J	3.53e+00	4.9e-01	1.8e-01	3.6e-01	PCI/GDRY	09/09/2019 08:25 EDT
Pb212	J	8.87e-01	1.0e-01	1.0e-02	2.1e-02	PCI/GDRY	09/09/2019 08:25 EDT
Pb214	J	3.41e+00	3.8e-01	1.6e-02	3.1e-02	PCI/GDRY	09/09/2019 08:25 EDT
Ra226	J	4.32e+00	5.4e-01	1.5e-01	3.0e-01	PCI/GDRY	09/09/2019 08:25 EDT
Ra228		8.91e-01	1.0e-01	2.7e-02	5.5e-02	PCI/GDRY	09/09/2019 08:25 EDT
Th234	J	8.90e-01	2.1e-01	1.5e-01	2.9e-01	PCI/GDRY	09/09/2019 08:25 EDT
Tl208	J	2.91e-01	3.6e-02	8.9e-03	1.8e-02	PCI/GDRY	09/09/2019 08:25 EDT
U235		-2.17e-02	7.1e-02	5.4e-02	1.1e-01	PCI/GDRY	09/09/2019 08:25 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10552C	Amount analyzed:	3.471e+02 GDRY
Client sample ID:	C008-SB008-048060-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-09 09:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	94.57 %	Analyst:	JEA
Ash/dry weight:	98.42 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/22/2019 11:20	1000.0	GE16	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	7.69e-01	1.5e-01	6.2e-02	1.3e-01	PCI/GDRY	09/09/2019 09:35 EDT
Bi214	J	8.88e-01	9.8e-02	9.3e-03	1.9e-02	PCI/GDRY	09/09/2019 09:35 EDT
Cs137		9.17e-03	5.1e-03	3.4e-03	6.9e-03	PCI/GDRY	09/09/2019 09:35 EDT
K40		1.39e+01	1.5e+00	4.2e-02	8.6e-02	PCI/GDRY	09/09/2019 09:35 EDT
Pb210	J	8.73e-01	1.8e-01	1.1e-01	2.1e-01	PCI/GDRY	09/09/2019 09:35 EDT
Pb212	J	7.71e-01	8.7e-02	1.1e-02	2.2e-02	PCI/GDRY	09/09/2019 09:35 EDT
Pb214	J	1.02e+00	1.1e-01	1.0e-02	2.1e-02	PCI/GDRY	09/09/2019 09:35 EDT
Ra226	J	1.62e+00	2.4e-01	9.6e-02	1.9e-01	PCI/GDRY	09/09/2019 09:35 EDT
Ra228		7.18e-01	8.6e-02	2.0e-02	4.0e-02	PCI/GDRY	09/09/2019 09:35 EDT
Th234	J	3.63e-01	1.7e-01	1.1e-01	2.2e-01	PCI/GDRY	09/09/2019 09:35 EDT
Tl208	J	2.12e-01	2.5e-02	5.0e-03	1.0e-02	PCI/GDRY	09/09/2019 09:35 EDT
U235	J	3.83e-02	4.0e-02	3.3e-02	6.6e-02	PCI/GDRY	09/09/2019 09:35 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10553D	Amount analyzed:	7.000e+01 GDRY
Client sample ID:	C008-SB008-084096-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-09 09:40 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	20.50 %	Analyst:	JEA
Ash/dry weight:	27.77 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/21/2019 09:58	1000.0	GE23	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	8.89e-01	3.3e-01	1.7e-01	3.5e-01	PCI/GDRY	09/09/2019 09:40 EDT
Bi214	J	2.02e+00	2.3e-01	2.8e-02	5.7e-02	PCI/GDRY	09/09/2019 09:40 EDT
Cs137		1.27e-02	1.7e-02	1.4e-02	2.8e-02	PCI/GDRY	09/09/2019 09:40 EDT
K40		4.32e+00	5.7e-01	1.5e-01	3.2e-01	PCI/GDRY	09/09/2019 09:40 EDT
Pb210	J	2.76e+00	4.1e-01	1.8e-01	3.6e-01	PCI/GDRY	09/09/2019 09:40 EDT
Pb212	J	5.25e-01	6.9e-02	2.2e-02	4.5e-02	PCI/GDRY	09/09/2019 09:40 EDT
Pb214	J	2.55e+00	2.8e-01	3.2e-02	6.5e-02	PCI/GDRY	09/09/2019 09:40 EDT
Ra226	J	4.57e+00	7.1e-01	3.0e-01	6.0e-01	PCI/GDRY	09/09/2019 09:40 EDT
Ra228		5.41e-01	1.1e-01	4.9e-02	1.0e-01	PCI/GDRY	09/09/2019 09:40 EDT
Th234	J	1.57e+00	3.6e-01	2.2e-01	4.5e-01	PCI/GDRY	09/09/2019 09:40 EDT
Tl208	J	2.03e-01	3.6e-02	1.4e-02	2.9e-02	PCI/GDRY	09/09/2019 09:40 EDT
U235		3.25e-02	8.1e-02	6.1e-02	1.2e-01	PCI/GDRY	09/09/2019 09:40 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10554E	Amount analyzed:	3.242e+02 GDRY
Client sample ID:	C008-SB009-000012-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-09 10:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	95.17 %	Analyst:	JEA
Ash/dry weight:	96.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/25/2019 13:58	1000.0	GE16	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	1.04e+00	1.9e-01	7.3e-02	1.5e-01	PCI/GDRY	09/09/2019 10:00 EDT
Bi214	J	9.81e-01	1.1e-01	1.0e-02	2.0e-02	PCI/GDRY	09/09/2019 10:00 EDT
Cs137		3.04e-02	8.0e-03	4.3e-03	8.8e-03	PCI/GDRY	09/09/2019 10:00 EDT
K40		1.42e+01	1.6e+00	4.4e-02	9.0e-02	PCI/GDRY	09/09/2019 10:00 EDT
Pb210	J	1.06e+00	2.3e-01	1.3e-01	2.6e-01	PCI/GDRY	09/09/2019 10:00 EDT
Pb212	J	9.34e-01	1.0e-01	1.2e-02	2.5e-02	PCI/GDRY	09/09/2019 10:00 EDT
Pb214	J	1.11e+00	1.2e-01	1.3e-02	2.7e-02	PCI/GDRY	09/09/2019 10:00 EDT
Ra226	J	1.93e+00	2.9e-01	1.1e-01	2.3e-01	PCI/GDRY	09/09/2019 10:00 EDT
Ra228		8.17e-01	9.4e-02	1.9e-02	3.8e-02	PCI/GDRY	09/09/2019 10:00 EDT
Th234	J	6.65e-01	1.9e-01	1.2e-01	2.4e-01	PCI/GDRY	09/09/2019 10:00 EDT
Tl208	J	2.58e-01	3.0e-02	5.4e-03	1.1e-02	PCI/GDRY	09/09/2019 10:00 EDT
U235	J	3.55e-02	4.3e-02	3.5e-02	7.1e-02	PCI/GDRY	09/09/2019 10:00 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10555F	Amount analyzed:	6.337e+02 GDRY
Client sample ID:	C008-SB009-072084-01	Preparation batch #:	0016824G
Matrix:	SOIL	Assay batch #:	0024721G
Collected:	2019-09-09 10:05 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	84.76 %	Analyst:	JEA
Ash/dry weight:	93.63 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/25/2019 14:01	1000.0	GE15	JEA

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	J	8.03e-01	1.3e-01	5.1e-02	1.0e-01	PCI/GDRY	09/09/2019 10:05 EDT
Bi214	J	6.28e-01	7.1e-02	8.4e-03	1.7e-02	PCI/GDRY	09/09/2019 10:05 EDT
Cs137		-3.69e-03	5.5e-03	4.5e-03	9.0e-03	PCI/GDRY	09/09/2019 10:05 EDT
K40		1.32e+01	1.4e+00	3.5e-02	7.2e-02	PCI/GDRY	09/09/2019 10:05 EDT
Pb210	J	7.76e-01	2.0e-01	1.2e-01	2.4e-01	PCI/GDRY	09/09/2019 10:05 EDT
Pb212	J	8.09e-01	9.0e-02	9.6e-03	1.9e-02	PCI/GDRY	09/09/2019 10:05 EDT
Pb214	J	7.47e-01	8.3e-02	9.5e-03	1.9e-02	PCI/GDRY	09/09/2019 10:05 EDT
Ra226	J	1.27e+00	2.0e-01	8.4e-02	1.7e-01	PCI/GDRY	09/09/2019 10:05 EDT
Ra228		6.92e-01	7.8e-02	1.4e-02	2.9e-02	PCI/GDRY	09/09/2019 10:05 EDT
Th234	J	4.71e-01	1.7e-01	1.1e-01	2.2e-01	PCI/GDRY	09/09/2019 10:05 EDT
Tl208	J	2.13e-01	2.5e-02	4.2e-03	8.4e-03	PCI/GDRY	09/09/2019 10:05 EDT
U235		2.58e-03	3.6e-02	3.0e-02	6.0e-02	PCI/GDRY	09/09/2019 10:05 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10537D	Amount analyzed:	1.009e+00 GASH
Client sample ID:	C008-SB001-036048-01	Preparation batch #:	0016820C
Matrix:	SOIL	Assay batch #:	0024717L
Collected:	2019-09-08 14:10 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	94.64 %	Analyst:	SPK
Ash/dry weight:	95.64 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:21	1000.0	AS33	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	4.44e-01 U	9.2e-02	1.1e-02	2.9e-02	PCI/GDRY	11/14/2019 15:21 CST
U235	2.87e-02	2.5e-02	8.3e-03	2.7e-02	PCI/GDRY	11/14/2019 15:21 CST
U238	5.56e-01	1.1e-01	9.5e-03	2.7e-02	PCI/GDRY	11/14/2019 15:21 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10538E	Amount analyzed:	1.030e+00 GASH
Client sample ID:	C008-SB001-036048-02	Preparation batch #:	0016820C
Matrix:	SOIL	Assay batch #:	0024717L
Collected:	2019-09-08 14:10 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	93.01 %	Analyst:	SPK
Ash/dry weight:	95.21 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:20	1000.0	AS35	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	4.20e-01 U	8.6e-02	6.4e-03	2.0e-02	PCI/GDRY	11/14/2019 15:20 CST
U235	3.57e-02	2.6e-02	5.3e-03	2.0e-02	PCI/GDRY	11/14/2019 15:20 CST
U238	3.55e-01	7.8e-02	8.8e-03	2.5e-02	PCI/GDRY	11/14/2019 15:20 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10539F	Amount analyzed:	1.004e+00 GASH
Client sample ID:	C008-SB001-108120-01	Preparation batch #:	0016820C
Matrix:	SOIL	Assay batch #:	0024717L
Collected:	2019-09-08 14:15 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	59.03 %	Analyst:	SPK
Ash/dry weight:	91.71 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:20	1000.0	AS36	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	8.15e-01 U	1.2e-01	8.4e-03	2.3e-02	PCI/GDRY	11/14/2019 15:20 CST
U235	5.03e-02	2.9e-02	6.6e-03	2.1e-02	PCI/GDRY	11/14/2019 15:20 CST
U238	6.96e-01	1.1e-01	3.8e-03	1.4e-02	PCI/GDRY	11/14/2019 15:20 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10540Y	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C008-SB002-024036-01	Preparation batch #:	0016820C
Matrix:	SOIL	Assay batch #:	0024717L
Collected:	2019-09-08 15:25 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	88.87 %	Analyst:	SPK
Ash/dry weight:	86.80 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:20	1000.0	AS37	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	6.88e-01 U	1.3e-01	5.1e-03	1.9e-02	PCI/GDRY	11/14/2019 15:20 CST
U235	4.12e-02	3.0e-02	6.1e-03	2.3e-02	PCI/GDRY	11/14/2019 15:20 CST
U238	7.82e-01	1.4e-01	7.4e-03	2.4e-02	PCI/GDRY	11/14/2019 15:20 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10541Z	Amount analyzed:	1.006e+00 GASH
Client sample ID:	C008-SB002-060072-01	Preparation batch #:	0016820C
Matrix:	SOIL	Assay batch #:	0024717L
Collected:	2019-09-08 15:30 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	84.06 %	Analyst:	SPK
Ash/dry weight:	90.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:20	1000.0	AS38	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	5.27e-01 U	1.0e-01	1.0e-02	2.9e-02	PCI/GDRY	11/14/2019 15:20 CST
U235	2.25e-02	2.3e-02	9.8e-03	2.9e-02	PCI/GDRY	11/14/2019 15:20 CST
U238	6.04e-01	1.1e-01	1.0e-02	2.9e-02	PCI/GDRY	11/14/2019 15:20 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10542A	Amount analyzed:	1.018e+00 GASH
Client sample ID:	C008-SB003-000012-01	Preparation batch #:	0016820C
Matrix:	SOIL	Assay batch #:	0024717L
Collected:	2019-09-08 16:15 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	91.27 %	Analyst:	SPK
Ash/dry weight:	96.18 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:20	1000.0	AS39	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	4.07e-01 U	8.5e-02	6.6e-03	2.1e-02	PCI/GDRY	11/14/2019 15:20 CST
U235	4.80e-02	3.1e-02	7.9e-03	2.5e-02	PCI/GDRY	11/14/2019 15:20 CST
U238	4.33e-01	8.8e-02	4.6e-03	1.7e-02	PCI/GDRY	11/14/2019 15:20 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10543B	Amount analyzed:	9.996e-01 GASH
Client sample ID:	C008-SB003-072084-01	Preparation batch #:	0016820C
Matrix:	SOIL	Assay batch #:	0024717L
Collected:	2019-09-08 16:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	81.19 %	Analyst:	SPK
Ash/dry weight:	73.08 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:20	1000.0	AS40	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	1.75e+00 U	2.4e-01	6.7e-03	2.1e-02	PCI/GDRY	11/14/2019 15:20 CST
U235	9.99e-02	4.5e-02	5.5e-03	2.1e-02	PCI/GDRY	11/14/2019 15:20 CST
U238	1.78e+00	2.5e-01	8.1e-03	2.4e-02	PCI/GDRY	11/14/2019 15:20 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10544C	Amount analyzed:	1.037e+00 GASH
Client sample ID:	C008-SB004-012024-01	Preparation batch #:	0016820C
Matrix:	SOIL	Assay batch #:	0024717L
Collected:	2019-09-08 16:50 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	89.22 %	Analyst:	SPK
Ash/dry weight:	97.28 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:20	1000.0	AS65	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	5.06e-01 U	1.1e-01	1.7e-02	4.3e-02	PCI/GDRY	11/14/2019 15:20 CST
U235	2.61e-02	3.1e-02	1.9e-02	4.8e-02	PCI/GDRY	11/14/2019 15:20 CST
U238	5.29e-01	1.1e-01	2.0e-02	4.8e-02	PCI/GDRY	11/14/2019 15:20 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10545D	Amount analyzed:	1.029e+00 GASH
Client sample ID:	C008-SB004-084096-01	Preparation batch #:	0016820C
Matrix:	SOIL	Assay batch #:	0024717L
Collected:	2019-09-08 16:55 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	48.26 %	Analyst:	SPK
Ash/dry weight:	78.67 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:20	1000.0	AS68	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	1.91e+00 U	2.5e-01	6.3e-03	2.0e-02	PCI/GDRY	11/14/2019 15:20 CST
U235	6.41e-02	3.5e-02	9.2e-03	2.7e-02	PCI/GDRY	11/14/2019 15:20 CST
U238	1.96e+00	2.6e-01	4.4e-03	1.6e-02	PCI/GDRY	11/14/2019 15:20 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10546E	Amount analyzed:	1.056e+00 GASH
Client sample ID:	C008-SB005-036048-01	Preparation batch #:	0016831F
Matrix:	SOIL	Assay batch #:	0024738R
Collected:	2019-09-08 17:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	90.31 %	Analyst:	SPK
Ash/dry weight:	88.79 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 14:33	1000.0	AS99	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	7.25e-01 U	1.3e-01	8.6e-03	2.6e-02	PCI/GDRY	11/20/2019 14:33 CST
U235	2.65e-02	2.4e-02	5.9e-03	2.2e-02	PCI/GDRY	11/20/2019 14:33 CST
U238	6.73e-01	1.2e-01	1.2e-02	3.2e-02	PCI/GDRY	11/20/2019 14:33 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10547F	Amount analyzed:	1.011e+00 GASH
Client sample ID:	C008-SB005-060072-01	Preparation batch #:	0016831F
Matrix:	SOIL	Assay batch #:	0024738R
Collected:	2019-09-08 17:40 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	81.14 %	Analyst:	SPK
Ash/dry weight:	90.29 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 14:33	1000.0	AS101	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	9.21e-01U	1.6e-01	8.7e-03	2.8e-02	PCI/GDRY	11/20/2019 14:33 CST
U235	3.04e-02	2.9e-02	1.0e-02	3.3e-02	PCI/GDRY	11/20/2019 14:33 CST
U238	8.23e-01	1.5e-01	1.3e-02	3.6e-02	PCI/GDRY	11/20/2019 14:33 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10548G	Amount analyzed:	1.021e+00 GASH
Client sample ID:	C008-SB006-024036-01	Preparation batch #:	0016831F
Matrix:	SOIL	Assay batch #:	0024738R
Collected:	2019-09-08 18:15 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	95.38 %	Analyst:	SPK
Ash/dry weight:	98.58 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 14:33	1000.0	AS102	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	3.77e-01 U	8.5e-02	1.0e-02	2.9e-02	PCI/GDRY	11/20/2019 14:33 CST
U235	9.11e-03	1.9e-02	1.2e-02	3.5e-02	PCI/GDRY	11/20/2019 14:33 CST
U238	3.79e-01	8.6e-02	7.4e-03	2.3e-02	PCI/GDRY	11/20/2019 14:33 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10549H	Amount analyzed:	1.012e+00 GASH
Client sample ID:	C008-SB006-060072-01	Preparation batch #:	0016831F
Matrix:	SOIL	Assay batch #:	0024738R
Collected:	2019-09-09 18:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	79.29 %	Analyst:	SPK
Ash/dry weight:	86.11 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 14:33	1000.0	AS103	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	1.10e+00U	1.8e-01	8.2e-03	2.6e-02	PCI/GDRY	11/20/2019 14:33 CST
U235	3.71e-02	3.1e-02	1.2e-02	3.5e-02	PCI/GDRY	11/20/2019 14:33 CST
U238	1.09e+00	1.8e-01	1.1e-02	3.2e-02	PCI/GDRY	11/20/2019 14:33 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10550A	Amount analyzed:	1.006e+00 GASH
Client sample ID:	C008-SB007-024036-01	Preparation batch #:	0016831F
Matrix:	SOIL	Assay batch #:	0024738R
Collected:	2019-09-09 08:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	85.05 %	Analyst:	SPK
Ash/dry weight:	37.87 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 14:34	1000.0	AS105	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	9.20e-01	1.2e-01	3.2e-03	1.0e-02	PCI/GDRY	11/20/2019 14:34 CST
U235	4.00e-02	1.9e-02	2.7e-03	1.0e-02	PCI/GDRY	11/20/2019 14:34 CST
U238	8.48e-01	1.2e-01	3.9e-03	1.2e-02	PCI/GDRY	11/20/2019 14:34 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10551B	Amount analyzed:	1.070e+00 GASH
Client sample ID:	C008-SB007-060072-01	Preparation batch #:	0016831F
Matrix:	SOIL	Assay batch #:	0024738R
Collected:	2019-09-09 08:25 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	85.12 %	Analyst:	SPK
Ash/dry weight:	88.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 14:34	1000.0	AS106	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	5.91e-01	1.1e-01	8.9e-03	2.5e-02	PCI/GDRY	11/20/2019 14:34 CST
U235	1.34e-02	1.9e-02	9.4e-03	2.8e-02	PCI/GDRY	11/20/2019 14:34 CST
U238	5.67e-01	1.0e-01	4.5e-03	1.7e-02	PCI/GDRY	11/20/2019 14:34 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10552C	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C008-SB008-048060-01	Preparation batch #:	0016831F
Matrix:	SOIL	Assay batch #:	0024738R
Collected:	2019-09-09 09:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	94.57 %	Analyst:	SPK
Ash/dry weight:	98.42 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 14:34	1000.0	AS107	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	4.39e-01	9.7e-02	9.6e-03	2.9e-02	PCI/GDRY	11/20/2019 14:34 CST
U235	4.45e-02	3.2e-02	6.6e-03	2.5e-02	PCI/GDRY	11/20/2019 14:34 CST
U238	4.41e-01	9.7e-02	8.0e-03	2.5e-02	PCI/GDRY	11/20/2019 14:34 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10553D	Amount analyzed:	9.846e-01 GASH
Client sample ID:	C008-SB008-084096-01	Preparation batch #:	0016831F
Matrix:	SOIL	Assay batch #:	0024738R
Collected:	2019-09-09 09:40 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	20.50 %	Analyst:	SPK
Ash/dry weight:	27.77 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 14:34	1000.0	AS108	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	2.02e+00	2.2e-01	2.4e-03	7.1e-03	PCI/GDRY	11/20/2019 14:34 CST
U235	7.76e-02	2.3e-02	1.6e-03	6.2e-03	PCI/GDRY	11/20/2019 14:34 CST
U238	1.47e+00	1.6e-01	2.4e-03	7.1e-03	PCI/GDRY	11/20/2019 14:34 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10554E	Amount analyzed:	1.002e+00 GASH
Client sample ID:	C008-SB009-000012-01	Preparation batch #:	0016831F
Matrix:	SOIL	Assay batch #:	0024738R
Collected:	2019-09-09 10:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	95.17 %	Analyst:	SPK
Ash/dry weight:	96.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 14:34	1000.0	AS109	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	4.56e-01	9.6e-02	7.4e-03	2.4e-02	PCI/GDRY	11/20/2019 14:34 CST
U235	6.84e-02	3.8e-02	6.1e-03	2.3e-02	PCI/GDRY	11/20/2019 14:34 CST
U238	5.40e-01	1.1e-01	7.4e-03	2.4e-02	PCI/GDRY	11/20/2019 14:34 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10555F	Amount analyzed:	1.039e+00 GASH
Client sample ID:	C008-SB009-072084-01	Preparation batch #:	0016831F
Matrix:	SOIL	Assay batch #:	0024738R
Collected:	2019-09-09 10:05 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	84.76 %	Analyst:	SPK
Ash/dry weight:	93.63 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/20/2019 14:34	1000.0	AS110	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	4.52e-01	9.4e-02	4.9e-03	1.8e-02	PCI/GDRY	11/20/2019 14:34 CST
U235	2.79e-02	2.6e-02	1.0e-02	3.1e-02	PCI/GDRY	11/20/2019 14:34 CST
U238	4.27e-01	9.1e-02	4.9e-03	1.8e-02	PCI/GDRY	11/20/2019 14:34 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10537D	Amount analyzed:	1.009e+00 GASH
Client sample ID:	C008-SB001-036048-01	Preparation batch #:	0016819K
Matrix:	SOIL	Assay batch #:	0024716K
Collected:	2019-09-08 14:10 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	94.64 %	Analyst:	SPK
Ash/dry weight:	95.64 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:22	1000.0	AS81	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	2.93e-02	2.6e-02	6.5e-03	2.5e-02	PCI/GDRY	11/14/2019 15:22 CST
Th228	6.32e-01	1.0e-01	1.1e-02	2.8e-02	PCI/GDRY	11/14/2019 15:22 CST
Th230	6.01e-01	1.0e-01	2.8e-02	6.2e-02	PCI/GDRY	11/14/2019 15:22 CST
Th232	5.73e-01	9.6e-02	4.8e-03	1.6e-02	PCI/GDRY	11/14/2019 15:22 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10538E	Amount analyzed:	1.030e+00 GASH
Client sample ID:	C008-SB001-036048-02	Preparation batch #:	0016819K
Matrix:	SOIL	Assay batch #:	0024716K
Collected:	2019-09-08 14:10 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	93.01 %	Analyst:	SPK
Ash/dry weight:	95.21 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:22	1000.0	AS83	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	6.03e-02	3.9e-02	7.3e-03	2.8e-02	PCI/GDRY	11/14/2019 15:22 CST
Th228	5.97e-01	1.0e-01	1.1e-02	2.9e-02	PCI/GDRY	11/14/2019 15:22 CST
Th230	6.43e-01	1.1e-01	2.8e-02	6.3e-02	PCI/GDRY	11/14/2019 15:22 CST
Th232	5.67e-01	1.0e-01	7.8e-03	2.3e-02	PCI/GDRY	11/14/2019 15:22 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10539F	Amount analyzed:	1.004e+00 GASH
Client sample ID:	C008-SB001-108120-01	Preparation batch #:	0016819K
Matrix:	SOIL	Assay batch #:	0024716K
Collected:	2019-09-08 14:15 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	59.03 %	Analyst:	SPK
Ash/dry weight:	91.71 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:22	1000.0	AS84	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	2.50e-02	2.5e-02	6.7e-03	2.5e-02	PCI/GDRY	11/14/2019 15:22 CST
Th228	8.17e-01	1.2e-01	4.1e-03	1.5e-02	PCI/GDRY	11/14/2019 15:22 CST
Th230	7.60e-01	1.2e-01	2.7e-02	6.1e-02	PCI/GDRY	11/14/2019 15:22 CST
Th232	7.56e-01	1.2e-01	6.2e-03	1.9e-02	PCI/GDRY	11/14/2019 15:22 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10540Y	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C008-SB002-024036-01	Preparation batch #:	0016819K
Matrix:	SOIL	Assay batch #:	0024716K
Collected:	2019-09-08 15:25 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	88.87 %	Analyst:	SPK
Ash/dry weight:	86.80 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:22	1000.0	AS85	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	4.90e-02	3.5e-02	9.8e-03	3.1e-02	PCI/GDRY	11/14/2019 15:22 CST
Th228	9.51e-01	1.4e-01	6.8e-03	2.0e-02	PCI/GDRY	11/14/2019 15:22 CST
Th230	1.25e+00	1.7e-01	2.6e-02	5.9e-02	PCI/GDRY	11/14/2019 15:22 CST
Th232	9.06e-01	1.3e-01	4.9e-03	1.6e-02	PCI/GDRY	11/14/2019 15:22 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10541Z	Amount analyzed:	1.006e+00 GASH
Client sample ID:	C008-SB002-060072-01	Preparation batch #:	0016819K
Matrix:	SOIL	Assay batch #:	0024716K
Collected:	2019-09-08 15:30 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	84.06 %	Analyst:	SPK
Ash/dry weight:	90.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:22	1000.0	AS86	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	6.71e-02	4.0e-02	6.9e-03	2.6e-02	PCI/GDRY	11/14/2019 15:22 CST
Th228	6.41e-01	1.1e-01	7.9e-03	2.2e-02	PCI/GDRY	11/14/2019 15:22 CST
Th230	7.41e-01	1.2e-01	2.7e-02	6.1e-02	PCI/GDRY	11/14/2019 15:22 CST
Th232	6.21e-01	1.0e-01	7.3e-03	2.1e-02	PCI/GDRY	11/14/2019 15:22 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10542A	Amount analyzed:	1.018e+00 GASH
Client sample ID:	C008-SB003-000012-01	Preparation batch #:	0016819K
Matrix:	SOIL	Assay batch #:	0024716K
Collected:	2019-09-08 16:15 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	91.27 %	Analyst:	SPK
Ash/dry weight:	96.18 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:23	1000.0	AS88	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	1.23e-02	2.2e-02	1.2e-02	3.7e-02	PCI/GDRY	11/14/2019 15:23 CST
Th228	7.03e-01	1.1e-01	1.1e-02	2.9e-02	PCI/GDRY	11/14/2019 15:23 CST
Th230	4.93e-01	9.6e-02	2.9e-02	6.4e-02	PCI/GDRY	11/14/2019 15:23 CST
Th232	6.37e-01	1.1e-01	7.5e-03	2.2e-02	PCI/GDRY	11/14/2019 15:23 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10543B	Amount analyzed:	9.996e-01 GASH
Client sample ID:	C008-SB003-072084-01	Preparation batch #:	0016819K
Matrix:	SOIL	Assay batch #:	0024716K
Collected:	2019-09-08 16:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	81.19 %	Analyst:	SPK
Ash/dry weight:	73.08 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:22	1000.0	AS97	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	1.68e-01	8.6e-02	1.2e-02	4.7e-02	PCI/GDRY	11/14/2019 15:22 CST
Th228	1.94e+00	3.2e-01	1.7e-02	4.6e-02	PCI/GDRY	11/14/2019 15:22 CST
Th230	1.87e+00	3.2e-01	2.9e-02	6.9e-02	PCI/GDRY	11/14/2019 15:22 CST
Th232	2.14e+00	3.5e-01	1.1e-02	3.4e-02	PCI/GDRY	11/14/2019 15:22 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10544C	Amount analyzed:	1.037e+00 GASH
Client sample ID:	C008-SB004-012024-01	Preparation batch #:	0016819K
Matrix:	SOIL	Assay batch #:	0024716K
Collected:	2019-09-08 16:50 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	89.22 %	Analyst:	SPK
Ash/dry weight:	97.28 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:22	1000.0	AS98	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	4.03e-02	3.2e-02	1.0e-02	3.2e-02	PCI/GDRY	11/14/2019 15:22 CST
Th228	8.44e-01	1.3e-01	1.0e-02	2.7e-02	PCI/GDRY	11/14/2019 15:22 CST
Th230	6.19e-01	1.1e-01	2.9e-02	6.4e-02	PCI/GDRY	11/14/2019 15:22 CST
Th232	8.38e-01	1.3e-01	7.5e-03	2.2e-02	PCI/GDRY	11/14/2019 15:22 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10545D	Amount analyzed:	1.029e+00 GASH
Client sample ID:	C008-SB004-084096-01	Preparation batch #:	0016819K
Matrix:	SOIL	Assay batch #:	0024716K
Collected:	2019-09-08 16:55 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	48.26 %	Analyst:	SPK
Ash/dry weight:	78.67 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/14/2019 15:22	1000.0	AS99	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	5.92e-02	3.9e-02	1.2e-02	3.6e-02	PCI/GDRY	11/14/2019 15:22 CST
Th228	1.67e+00	2.2e-01	7.0e-03	2.1e-02	PCI/GDRY	11/14/2019 15:22 CST
Th230	1.49e+00	2.0e-01	2.5e-02	5.6e-02	PCI/GDRY	11/14/2019 15:22 CST
Th232	1.76e+00	2.3e-01	6.3e-03	1.9e-02	PCI/GDRY	11/14/2019 15:22 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10546E	Amount analyzed:	1.056e+00 GASH
Client sample ID:	C008-SB005-036048-01	Preparation batch #:	0016830E
Matrix:	SOIL	Assay batch #:	0024737Q
Collected:	2019-09-08 17:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	90.31 %	Analyst:	SPK
Ash/dry weight:	88.79 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 16:19	1000.0	AS80	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	5.58e-02	3.3e-02	5.7e-03	2.2e-02	PCI/GDRY	11/19/2019 16:19 CST
Th228	6.84e-01	1.0e-01	1.2e-02	2.9e-02	PCI/GDRY	11/19/2019 16:19 CST
Th230	1.82e+00	2.2e-01	2.5e-02	5.5e-02	PCI/GDRY	11/19/2019 16:19 CST
Th232	7.35e-01	1.1e-01	5.3e-03	1.6e-02	PCI/GDRY	11/19/2019 16:19 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10547F	Amount analyzed:	1.011e+00 GASH
Client sample ID:	C008-SB005-060072-01	Preparation batch #:	0016830E
Matrix:	SOIL	Assay batch #:	0024737Q
Collected:	2019-09-08 17:40 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	81.14 %	Analyst:	SPK
Ash/dry weight:	90.29 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 16:19	1000.0	AS88	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	5.34e-02	3.6e-02	7.1e-03	2.7e-02	PCI/GDRY	11/19/2019 16:19 CST
Th228	9.66e-01	1.4e-01	9.7e-03	2.6e-02	PCI/GDRY	11/19/2019 16:19 CST
Th230	9.61e-01	1.5e-01	2.7e-02	6.1e-02	PCI/GDRY	11/19/2019 16:19 CST
Th232	9.84e-01	1.4e-01	6.5e-03	2.0e-02	PCI/GDRY	11/19/2019 16:19 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10548G	Amount analyzed:	1.021e+00 GASH
Client sample ID:	C008-SB006-024036-01	Preparation batch #:	0016830E
Matrix:	SOIL	Assay batch #:	0024737Q
Collected:	2019-09-08 18:15 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	95.38 %	Analyst:	SPK
Ash/dry weight:	98.58 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 16:18	1000.0	AS97	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	3.20e-02	3.3e-02	1.7e-02	4.6e-02	PCI/GDRY	11/19/2019 16:18 CST
Th228	6.79e-01	1.1e-01	1.1e-02	2.9e-02	PCI/GDRY	11/19/2019 16:18 CST
Th230	3.98e-01	8.9e-02	3.0e-02	6.6e-02	PCI/GDRY	11/19/2019 16:18 CST
Th232	5.51e-01	9.9e-02	5.4e-03	1.8e-02	PCI/GDRY	11/19/2019 16:18 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10549H	Amount analyzed:	1.012e+00 GASH
Client sample ID:	C008-SB006-060072-01	Preparation batch #:	0016830E
Matrix:	SOIL	Assay batch #:	0024737Q
Collected:	2019-09-09 18:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	79.29 %	Analyst:	SPK
Ash/dry weight:	86.11 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 16:18	1000.0	AS98	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	8.49e-02	4.5e-02	9.8e-03	3.1e-02	PCI/GDRY	11/19/2019 16:18 CST
Th228	1.40e+00	1.9e-01	6.8e-03	2.0e-02	PCI/GDRY	11/19/2019 16:18 CST
Th230	1.31e+00	1.8e-01	2.6e-02	5.9e-02	PCI/GDRY	11/19/2019 16:18 CST
Th232	1.26e+00	1.7e-01	8.1e-03	2.3e-02	PCI/GDRY	11/19/2019 16:18 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10550A	Amount analyzed:	1.006e+00 GASH
Client sample ID:	C008-SB007-024036-01	Preparation batch #:	0016830E
Matrix:	SOIL	Assay batch #:	0024737Q
Collected:	2019-09-09 08:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	85.05 %	Analyst:	SPK
Ash/dry weight:	37.87 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 16:18	1000.0	AS99	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	8.74e-02	3.2e-02	4.6e-03	1.5e-02	PCI/GDRY	11/19/2019 16:18 CST
Th228	8.82e-01	1.1e-01	5.4e-03	1.4e-02	PCI/GDRY	11/19/2019 16:18 CST
Th230	2.07e+00	2.3e-01	1.2e-02	2.6e-02	PCI/GDRY	11/19/2019 16:18 CST
Th232	8.50e-01	1.1e-01	3.4e-03	9.8e-03	PCI/GDRY	11/19/2019 16:18 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10551B	Amount analyzed:	1.070e+00 GASH
Client sample ID:	C008-SB007-060072-01	Preparation batch #:	0016830E
Matrix:	SOIL	Assay batch #:	0024737Q
Collected:	2019-09-09 08:25 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	85.12 %	Analyst:	SPK
Ash/dry weight:	88.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 16:18	1000.0	AS100	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	4.81e-02	3.2e-02	8.7e-03	2.8e-02	PCI/GDRY	11/19/2019 16:18 CST
Th228	7.33e-01	1.1e-01	7.6e-03	2.1e-02	PCI/GDRY	11/19/2019 16:18 CST
Th230	1.29e+00	1.7e-01	2.5e-02	5.5e-02	PCI/GDRY	11/19/2019 16:18 CST
Th232	6.28e-01	9.9e-02	7.2e-03	2.0e-02	PCI/GDRY	11/19/2019 16:18 CST

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SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10552C	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C008-SB008-048060-01	Preparation batch #:	0016830E
Matrix:	SOIL	Assay batch #:	0024737Q
Collected:	2019-09-09 09:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	94.57 %	Analyst:	SPK
Ash/dry weight:	98.42 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 16:18	1000.0	AS101	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	2.76e-02	2.8e-02	1.2e-02	3.6e-02	PCI/GDRY	11/19/2019 16:18 CST
Th228	6.03e-01	1.0e-01	1.0e-02	2.7e-02	PCI/GDRY	11/19/2019 16:18 CST
Th230	4.19e-01	8.8e-02	2.9e-02	6.5e-02	PCI/GDRY	11/19/2019 16:18 CST
Th232	5.38e-01	9.4e-02	5.1e-03	1.7e-02	PCI/GDRY	11/19/2019 16:18 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10553D	Amount analyzed:	9.846e-01 GASH
Client sample ID:	C008-SB008-084096-01	Preparation batch #:	0016830E
Matrix:	SOIL	Assay batch #:	0024737Q
Collected:	2019-09-09 09:40 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	20.50 %	Analyst:	SPK
Ash/dry weight:	27.77 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 16:18	1000.0	AS102	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	3.56e-02	1.8e-02	2.6e-03	9.9e-03	PCI/GDRY	11/19/2019 16:18 CST
Th228	4.82e-01	6.8e-02	3.6e-03	9.7e-03	PCI/GDRY	11/19/2019 16:18 CST
Th230	7.09e-01	9.3e-02	9.2e-03	2.1e-02	PCI/GDRY	11/19/2019 16:18 CST
Th232	4.55e-01	6.5e-02	2.4e-03	7.3e-03	PCI/GDRY	11/19/2019 16:18 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10554E	Amount analyzed:	1.002e+00 GASH
Client sample ID:	C008-SB009-000012-01	Preparation batch #:	0016830E
Matrix:	SOIL	Assay batch #:	0024737Q
Collected:	2019-09-09 10:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	95.17 %	Analyst:	SPK
Ash/dry weight:	96.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 16:18	1000.0	AS103	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	2.73e-02	2.7e-02	7.3e-03	2.7e-02	PCI/GDRY	11/19/2019 16:18 CST
Th228	9.13e-01	1.4e-01	8.3e-03	2.4e-02	PCI/GDRY	11/19/2019 16:18 CST
Th230	7.44e-01	1.2e-01	2.9e-02	6.5e-02	PCI/GDRY	11/19/2019 16:18 CST
Th232	8.29e-01	1.3e-01	8.7e-03	2.4e-02	PCI/GDRY	11/19/2019 16:18 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900152

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10555F	Amount analyzed:	1.039e+00 GASH
Client sample ID:	C008-SB009-072084-01	Preparation batch #:	0016830E
Matrix:	SOIL	Assay batch #:	0024737Q
Collected:	2019-09-09 10:05 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	84.76 %	Analyst:	SPK
Ash/dry weight:	93.63 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
11/19/2019 16:18	1000.0	AS105	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	1.96e-02	2.1e-02	8.1e-03	2.6e-02	PCI/GDRY	11/19/2019 16:18 CST
Th228	4.47e-01	7.7e-02	7.0e-03	1.9e-02	PCI/GDRY	11/19/2019 16:18 CST
Th230	7.69e-01	1.1e-01	2.6e-02	5.8e-02	PCI/GDRY	11/19/2019 16:18 CST
Th232	4.63e-01	7.8e-02	6.8e-03	1.9e-02	PCI/GDRY	11/19/2019 16:18 CST

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900153

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10556G	Amount analyzed:	3.000e+00 L
Client sample ID:	RB-190908	Preparation batch #:	0016871P
Matrix:	WATER	Assay batch #:	0024777Z
Collected:	2019-09-08 16:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/04/2019 10:29	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212		1.69e+00	1.0e+01	6.7e+00	1.4e+01	PCI/L	09/08/2019 16:00 EDT
Bi214	J	1.53e+00	2.0e+00	1.2e+00	2.4e+00	PCI/L	09/08/2019 16:00 EDT
Cs137		1.69e-01	7.9e-01	5.1e-01	1.0e+00	PCI/L	09/08/2019 16:00 EDT
K40		-1.05e+00	9.8e+00	5.2e+00	1.1e+01	PCI/L	09/08/2019 16:00 EDT
Pb210		-4.11e-01	1.5e+01	1.1e+01	2.2e+01	PCI/L	09/08/2019 16:00 EDT
Pb212		-2.52e-01	1.3e+00	9.1e-01	1.8e+00	PCI/L	09/08/2019 16:00 EDT
Pb214		-5.59e-01	1.9e+00	1.2e+00	2.4e+00	PCI/L	09/08/2019 16:00 EDT
Ra226	J	1.35e+01	1.4e+01	1.0e+01	2.0e+01	PCI/L	09/08/2019 16:00 EDT
Ra228		1.87e+00	2.8e+00	1.7e+00	3.6e+00	PCI/L	09/08/2019 16:00 EDT
Th234	U	8.47e+00	1.8e+01	1.5e+01	3.0e+01	PCI/L	09/08/2019 16:00 EDT
Tl208		2.07e-01	7.8e-01	5.1e-01	1.0e+00	PCI/L	09/08/2019 16:00 EDT
U235		-2.54e+00	5.7e+00	4.7e+00	9.4e+00	PCI/L	09/08/2019 16:00 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900153

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10557H	Amount analyzed:	3.000e+00 L
Client sample ID:	RB-190909	Preparation batch #:	0016871P
Matrix:	WATER	Assay batch #:	0024777Z
Collected:	2019-09-09 09:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/04/2019 10:28	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Bi212	3.52e+00	6.6e+00	5.4e+00	1.1e+01	PCI/L	09/09/2019 09:00 EDT
Bi214	5.22e-01	1.6e+00	1.1e+00	2.2e+00	PCI/L	09/09/2019 09:00 EDT
Cs137	-5.54e-02	5.9e-01	4.9e-01	1.0e+00	PCI/L	09/09/2019 09:00 EDT
K40	3.83e+00	5.7e+00	4.6e+00	9.5e+00	PCI/L	09/09/2019 09:00 EDT
Pb210	-1.46e+00	1.7e+01	1.2e+01	2.3e+01	PCI/L	09/09/2019 09:00 EDT
Pb212	2.23e-01	1.2e+00	1.0e+00	2.1e+00	PCI/L	09/09/2019 09:00 EDT
Pb214	1.01e+00	1.5e+00	1.2e+00	2.4e+00	PCI/L	09/09/2019 09:00 EDT
Ra226	-4.56e+00	2.3e+01	1.1e+01	2.3e+01	PCI/L	09/09/2019 09:00 EDT
Ra228	-1.71e+00	1.1e+01	1.9e+00	3.9e+00	PCI/L	09/09/2019 09:00 EDT
Th234	8.31e+00	1.7e+01	1.4e+01	2.8e+01	PCI/L	09/09/2019 09:00 EDT
Tl208	3.87e-01	6.3e-01	5.1e-01	1.0e+00	PCI/L	09/09/2019 09:00 EDT
U235	7.19e-01	4.4e+00	3.6e+00	7.2e+00	PCI/L	09/09/2019 09:00 EDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900153

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10556G	Amount analyzed:	2.000e-01 L
Client sample ID:	RB-190908	Preparation batch #:	0016737J
Matrix:	WATER	Assay batch #:	0024613D
Collected:	2019-09-08 16:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL U-EICHROM
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
10/21/2019 15:48	1000.0	AS33	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	1.36e-01	9.7e-02	2.0e-02	7.6e-02	PCI/L	10/21/2019 15:48 CDT
U235	0.00e+00	3.8e-02	2.4e-02	9.1e-02	PCI/L	10/21/2019 15:48 CDT
U238	6.56e-02	7.6e-02	3.5e-02	1.1e-01	PCI/L	10/21/2019 15:48 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900153

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10557H	Amount analyzed:	2.000e-01 L
Client sample ID:	RB-190909	Preparation batch #:	0016737J
Matrix:	WATER	Assay batch #:	0024613D
Collected:	2019-09-09 09:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL U-EICHROM
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
10/21/2019 15:48	1000.0	AS35	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
U234	1.93e-02	5.3e-02	3.4e-02	1.0e-01	PCI/L	10/21/2019 15:48 CDT
U235	3.47e-02	7.3e-02	4.6e-02	1.3e-01	PCI/L	10/21/2019 15:48 CDT
U238	3.86e-02	6.0e-02	2.8e-02	8.9e-02	PCI/L	10/21/2019 15:48 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900153

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10556G	Amount analyzed:	2.000e-01 L
Client sample ID:	RB-190908	Preparation batch #:	0016720Z
Matrix:	WATER	Assay batch #:	0024598Y
Collected:	2019-09-08 16:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
10/17/2019 15:20	1000.0	AS81	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	0.00e+00	5.6e-02	3.5e-02	1.3e-01	PCI/L	10/17/2019 15:20 CDT
Th228	1.43e-02	5.6e-02	4.1e-02	1.1e-01	PCI/L	10/17/2019 15:20 CDT
Th230	-8.56e-02	1.5e-01	1.5e-01	3.2e-01	PCI/L	10/17/2019 15:20 CDT
Th232	2.13e-02	5.4e-02	3.3e-02	1.0e-01	PCI/L	10/17/2019 15:20 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1900153

SAMPLE ANALYSIS REPORT

Lab sample #:	B9.10557H	Amount analyzed:	2.000e-01 L
Client sample ID:	RB-190909	Preparation batch #:	0016720Z
Matrix:	WATER	Assay batch #:	0024598Y
Collected:	2019-09-09 09:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
10/17/2019 15:20	1000.0	AS83	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	DLC	MDC	Unit	Reference Date
Th227	0.00e+00	5.8e-02	3.7e-02	1.4e-01	PCI/L	10/17/2019 15:20 CDT
Th228	7.20e-02	8.6e-02	4.6e-02	1.3e-01	PCI/L	10/17/2019 15:20 CDT
Th230	-1.60e-02	1.6e-01	1.5e-01	3.2e-01	PCI/L	10/17/2019 15:20 CDT
Th232	1.17e-02	4.5e-02	2.7e-02	8.9e-02	PCI/L	10/17/2019 15:20 CDT

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